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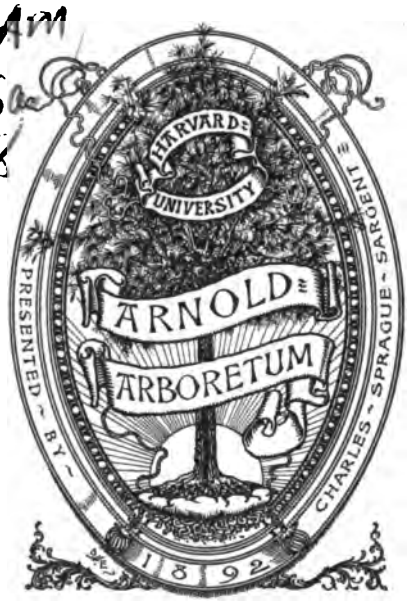
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ARNOLD
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PRESENTED BY
CHARLES SPRAGUE SARGENT
1892

THE

GARDENERS' MONTHLY

AND

HORTICULTURIST.

DEVOTED TO

HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

EDITED BY

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STATE BOTANIST OF PENNSYLVANIA,

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ILLUSTRATIONS.

Portrait of John J. Thomas, ... Frontispiece.

A

Acroclinium roseum flore pleno, 2 cuts, ... 8
Adiantum tetraphyllum gracile, ... 265
Annual Growth of Wood, Cross Section Showing, ... 20
Anthurium insigne, ... 249
Aphelandra punctata, ... 203
Apple, Lord Nelson, ... 45

B

Begonia Davisi, ... 138
Begonia Hofgartner Vetter, Double 120
Begonia Socratina, ... 22
Bowiea volubilis, ... 89

C

Canna Ehmanni, ... 38
Crinodendron Hookerianum, ... 109
Croton Cronstadtii, ... 277
Croton elegantissimus, ... 329
Cypripedium albo-purpureum, ... 184

D

Dieffenbachia amœna, ... 77
Dieffenbachia carderi, ... 11
Dieffenbachia Leopoldii, ... 12
Diplanderia carissima, ... 255
Duthie Park, Aberdeen, Scotland, ... 356

F

Flower Garden Design, ... 65
Flower Garden Design, Dropmore, ... 34
Fresh Water Sponges, ... 308

G

Grape, "Black Corinth," 240
Grape Vine, Large, Mr. Blodget's, ... 334

L

Lastrea Richardii multifida, ... 88
Leea amabilis, ... 170
Lilium auratum, A monstrous, ... 310

M

Maratana nitens, ... 373

O

Odontoglossum vexillarium, ... 42

P

Panax plumatum, ... 140
Peach, "The Schumaker," 111
Petunia nana compacta, ... 2
Pothos aurea, ... 215

R

Rose, "Andre Schwartz," colored plate, ... 129

S

Schizmatoglottis longispatha, ... 299
Steam Heating, 4 cuts, ... 102, 103

T

Tropæolum "Hermine Groshoff," Double, ... 53
Twe dan Fa (in Chinese characters), ... 93

V

Vegetable Garden, Frogmore, Plan, ... 303

X

Xeranthemum annuum superbissimum, ... 53

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FLOWER GARDEN AND PLEASURE GROUND.

SEASONABLE HINTS.

Asking a friend, who had a beautiful rural residence, why she did not plant vines, or creepers as the English would say, over the walls, she replied by referring to a mutual acquaintance who had done so with the result of making the walls so damp that the vines had to be cut away. It so happened that we knew all about the affair. The vines were allowed to cover the eaves, over the gutters and push their way in under the shingles of the roof. Thus obstructed, the water made its way down into the wall, from the top under the roof, and of course the wall was wet. Vines should always be kept cut down below the roof. It is a little trouble to do this once a year, but we cannot get even our shoes blacked without some trouble. Those who know how beautiful and how cosy looks a vine-covered cottage will not object to the few hours' labor it requires to keep vines from stopping up the gutter. Vines really make a wall dry. The millions of rootlets by which they adhere to the wall absorb water; and an examination will prove a vine-covered wall to be as "dry as an old bone." One great advantage of a vine-covered cottage, not often thought of, is that it is cooler in summer and warmer in winter than when there is but a mere naked wall. There are only a few vines that will cling of their own accord. These are the varieties of the English Ivy, the Trumpet vine, and the different kinds of Ampelopsis; and even the English Ivy will not stick to smooth walls. But if the Trumpet vine or the Ampelopsis be planted with the ivy, the latter will cling to the other vines as well as to the wall, and then keep safe hold. The evergreen Euonymus makes a good self-climbing vine, though not as much used as it really deserves to be. In order to have the beauty of variety which the great number of hardy vines affords, it is best to have trellises over the face of the walls. These are best made of strong galvanized wire. Iron hooks should be fastened, by melted sulphur, into stones sunk under ground, and others up under the eaves, and the wires attached to these. Cross wires can then be fastened to these, so as to make the meshes about a foot apart. Properly done these wires will last a lifetime, and the vines will, with a very little help, make their way of their own accord up the wires. Recently the writer noted a plant of the red-berried Pyracantha trained up over wires in this way. Evergreen, and covered by bright red berries, few things could make a cottage wall more gay. Wires, trellises, and other preparations can be made for this vine planting before the spring-time comes.

The chief enjoyment in this department at this season, lies in planning out the necessary improve-

ments, arrangements, and work to be done during the next active season. In gardening there are two styles of flower-growing,—one which looks to the enjoyment of beautiful flowers individually; the other for the effect which color gives to the beauty of one's ground. In the first place, hardy herbaceous plants, annuals, bulbs and such like plants, are to be employed, and the flower-beds for them must be arranged with this view, so as to afford opportunities for individual examination. There is nothing better for this than long, narrow borders; such, for instance, as the narrow belts along the walks of a vegetable garden.

In thinking of what might be done to render the garden more interesting, one might resolve to pay some attention to the improvement of some common garden flower. All we have to do is to take note of some possible improvement we desire, and select the seed of such as come the nearest to the ideal. This is the way florists get their new races. Take for instance the petunia. As a rule it grows in a very straggling manner. We want a more bushy and dense grower. Among our plants we note one which is less rampant than the rest. We save seed from this, and again the next season select the least straggling, and so on, from year to year, till the desired result has been gained. This has really been done with this petunia. Herewith

Petunia nana compacta.

is an illustration of what we suggest with the petunia in the hands of Haage & Schmidt, of Erfurt, who, in common with other Prussian florists, bestow great care on improving everything. They call it Petunia nana compacta; but anyone may get "nanas" or "compactas" with other garden flowers, as this firm has with petunias.

Pruning should be completed as soon as possible. Some judgment is required in pruning flowering shrubs, roses, &c., although it is usual to act as if it were one of the most common-place operations. One of the most clumsy of the hands is commonly set with a shears, and he "goes through" the whole place, clipping off every thing indiscriminately. Distinction should be made between those flowering shrubs that make a vigorous growth, and those which grow weakly; and between those which flower on the old wood of last year, and those which flower on the new growth of next season, as the effect of pruning is to force a strong and vigorous growth. Those specimens that already grow too strong to flower well, should be only lightly pruned; and, in the same individual, the weakest shoots should be cut-in more severely than the stronger ones. Some things, like the Mock Oranges, Lilacs and others, flower on the wood of last year. To prune these much now, therefore, destroys the flowering; while such as Altheas, which flower on the young wood, cannot be too severely cut-in, looking to that operation alone.

In pruning roses, the fall-blooming kinds, which flower on the new growth, may be pruned as severely as we wish; in fact, the "harder" they are cut-in the better. In this class are the Noisette, Bourbon, Tea, China and Hybrid Perpetual and Perpetual Moss. Without considerable experience, it is difficult for the amateur to distinguish these classes. The best way to get over the difficulty is to obtain the catalogues of the principal rose-growers, in which each kind is usually classified. Amateurs should pay more attention to the scientific—if we may so term it—study of the rose, and its classification and general management. No class of flowers is more easily understood, and no one affords so rich a fund of perpetual interest.

COMMUNICATIONS.

NOTES FROM TORRINGTON.

BY JAMES MORTON, GARDENER TO HON. L. W. COE, TORRINGTON, CONN.

To most readers of the GARDENERS' MONTHLY, the name Torrington will in no way be associated with horticultural pursuits. The rugged hills and frowning rocks of western Connecticut imply but little in the way of gardening progress. The incessant humming of machinery and the noise of the builder's hammer would be more impressive

upon the mind of a visitor among us than the floral embellishment of many of our homes. It is to be regretted when one meets with such taste as a house of snowy whiteness, blinds of a verdant hue and endowed with the neatest styles of architectural skill, surrounded with a fence that depicts a painter's talent, that inside chick-weed should run rampant, and purslane and the milk-weed luxuriate in unwonted freedom to the delight of crickets and grasshoppers. But thanks to the enthusiasm of many of our townsmen, and despite these happily now isolated scenes, there is even here now in the vicinity of Torrington much for the student of nature to look upon in her wild and unassisted state. How sweet to meet her at early morning when the sun beams forth its rays of golden light among the brambles and through the thickets, changing dewdrops into pearls and revealing the beauties of the woodbine and clematis as they twine around any available support that comes within their reach, and imparts a living richness of verdure and beauty to many an uncouth rock or lagging fence. Polygonatum multiflorum (Solomon's seal), Arisæma triphyllum (Jack in the pulpit) are to be seen waging a war for existence as they push their way through a dense mass of vegetation. Ferns of many forms adorn the woodland dells and bedeck the brows of many a crumbling precipice. Side by side by the stately pine, the button-wood and the sumach, lives and reigns throughout the vagaries of our climate that beautiful maiden hair—Adiantum pedatum—in all its frailty and gracefulness. Pteris tremula and aquilina, Athyriums, Polypodiums, Lastræas, Blechnums and many others find dwelling places, if not on terra firma, imbedded in the bosom of some towering rock or peeping down from the limbs of some aged woodland tree. The wild flowers that array the wayside, the hill-tops and glen in garments of orange, pink and white are also a study in themselves. But these wild scenes are not all we have here now, for in few places has gardening made more rapid strides than here under the guidance and through the indomitable energy and enthusiasm of the Hon. L. W. Coe, who now owns one of the most charming residences and possesses as rare and varied a collection of plants as is to be met with in the district, and all has sprung up within the past two years on a site that before gave place to dwelling houses, barns, miry swamps and gravel banks. A greenhouse and two graperies now stand, where but a brief time since, was a commodious homestead. The scene is now changed. All has vanished—not a vestige remains. Figs, grapevines and roses now flourish over the spot where the maternal parent might possibly have admonished an unruly child or watched with delight the juvenile freaks of her mirthsome progeny; and a bed of smilax now graces a corner where might have been a bedstead, a bureau or perchance the favorite resting-place of the family cat. The banana, the orange and lemon, the date palm and pine apple now thrive within a circle once hallowed by the sweet communion of family intercourse. The green turf now clothes where recently toads and innumerable amphibious creatures disported themselves in joyous revelry. Rockeries, fine foliage beds, geraniums and choice shrubs give an appearance to the place that hitherto knew no beauty. The dahlia stoops its haughty head to receive the homage of the honey bee. The tuberose and heliotrope shed their fragrance on the surrounding air. The hollyhock, the sunflower and lily of æsthetic fame, weep over the unhappy fate of their less captivating floral gems. The Humea sways its feathery plumes, and the Hydrangeas bend their laden heads; while the Agave stands unmoved. Such revolutions as these, wrought in so brief a period of time, but faintly illustrate the taste and determination with which the beautiful art is now pursued on the part of the worthy proprietor.

Our extent of glass at present is one conservatory, two graperies and propagating or starting house, with more in contemplation. The grapevines planted in January have this summer made canes from eighteen to twenty feet in length, and promise well for future fruition. In the conservatory and greenhouse we have the following collection of plants brought here at considerable expense within the past twelve months:

Ananassa sativa variegata
Allamanda Hendersonii
" neriifolia
Anthurium Schertzerianum
" grandis
Alocasia Machoriza
" metallica
Aralia filicifolia
Ardisia crenulata
Æschynanthus Lobbii
Anthericum repens
Acacia pubescens
Bilbergia brachystachya
Bertolonia guttata
Bougainvillea glabra
Begonias of many sorts
Cissus discolor
Corphya Australis
Curculigo recurvatum
Campsidium filicifolium
Croton variegatum
" Weismanni
Chorozema spectabilis
Clerodendron Balfourii
Cyperus alternifolius
Cycas revoluta
" circinalis
Cordylina Veitchii
Cyanophyllum magnificum
Chamærops humilis
" Fortunii
" excelsa
Caladium argyrites
" Bellymeii
" Mad. Heine
" Wightii
" Albert Edward
" bicolor Splendens
" Meyerbeer
" Excellent
Cyclamen persicum
Calla Æthiopica
Dionæa muscipula
Dipladenia amabilis

Dieffenbachia Baumanii
Dracæna terminalis
" Shepherdii
" ferrea
" Cassanova
" regina
" Guilfoylei
" Hendersonii
Diplacus grandiflorus
Euterpe edulis
Euphorbia splendens
" Jacquiniæflora
Eucharis candida
" grandiflora
Erica hyemalis
" autumnalis
Eugenia albiflora
Epiphyllum, 6 sorts
Ficus elastica
" repens
Gardenia florida
" Fortunii
Gloxinias, many sort
Hoya carnosa
Habrothamnus elegans
Hibiscus rosea sinensis
Imantophyllum miniatum
Ipomæa Horsfalliæ
Isolepis gracilis
Ixora Lobbii
" Javanica
" purpurea
" cuneifolia
" accuminata
" amabilis
Jasminium grandiflorum
" de Bitean
Kalosanthes coccinea
Luculia gratissima
Libonia floribunda
Lapageria rosea
Latania borbonica
Musa Cavendishii
Medinilla magnifica
Meyenia erecta
Mimosa pudica
Myrsiphyllum asparagoides
Maranta Zebrina
" Mackoyana
" tubispatha
" rosalineata
Nepenthes hybrida maculata
" Rajah
Pilea muscosa
Passiflora princeps
" quadrangularis var.
Pandanus Veitchii
Phyllanthus rosea picta
Phœnix dactylifera
Peperoma argyreia
Panicum variegata
Plumbago capensis
Reedia glaucescens
Russelia juncea
Rivinia tinctoria
Rhynchospermum jasminoides
Seaforthia elegans
Stephanotis floribunda
Sarracenia Drummondii alba
Tillandsia zebrina
" leopardinum
Tecoma jasminioides
Tradescantia zebrina
" discolor
" lucida var.
Thyrsacanthus rutilans
Vallotta purpurea
Yucca recurva

ORCHIDS.

Ærides japonicum
Brassia verrucosa
Broughtonia sanguinea
Calanthes Veitchii
" vestita
Cælogyne cristata
Cattleya citrina
Cypripedium insigne
" Harrisianum
" venustum
Dendrobium nobile
Epidendrum fragrans
Epidendrum vitellinum majus
Lælia autumnalis
Maxillaria picta
Oncidium flexuosum
" sphacelatum
Odontoglossum maculatum
" Rossi majus
" pulchellum
Peristeria elata
Phajus grandiflora
Stanhopea tigrina

FERNS.

Acrolepteris nidus avis
Adiantum Farleyense
" Capillus veneris
" gracillimum
" macrophyllum
" pentedactylon
" pubescens
" concinnum latum
Athyrium filix-fœmina
Asplenium viviparum
Blechnum Brasiliensis
Cibotium regale
Davallia canariensis
Gymnogramma chrysophylla
" Wettershallianum
Lomaria gibba
" " crispa
Lomaria ciliata
Nephrolepis davallioides
" exaltata
Polypodium orleanum
" cambricum
Pteris cretica albo-lineata
" hastata
" longifolia
" scaberula
" serrulata
Selaginella Wildenovii
" cæsia
" caulescens
" japonicum
" Mertensii
" viticulosa
Woodwardia radicans

Exclusive of this collection, we have a good assortment of cactus, camellias, azaleas and most of the nursery adjuncts for floral gaiety. And I now ask, is it not a good twelvemonth's work to bring this lot together? Palms from Astoria, pitcher plants from South Amboy, camellias from Waterbury, cactus from Utah, lilies from Honolulu, century plants from Mexico and Achimenes from England beyond the seas.

I would go more into the appearance, arrangement, &c., of many of these plants, but am induced to keep reticent on that matter, lest some of your readers might think I craved for egotistical fame. My maxim is "Honor to whom honor is due," and as a gardener and a lover of all belonging thereto, I could not let the efforts of my employer in the furtherance of my calling pass unnoticed.

GARDENING NOTES FROM NEW ORLEANS.

BY MR. M. H. LESTER, NEW ORLEANS, LA.

Having a few spare moments I thought a few notes might be interesting to some portion of your readers.

Owing to the example of some people of taste, gardening has assumed very respectable proportions in this city in the last few years, and several gardens "up town" will compare favorably with those of any city in the Union.

Some people have got the impression because orange and magnolia are used here for sidewalk trees that everything else will grow quite easily; but the sooner that impression is modified the better. Some things of course do better than in other places, Pittosporum tobira, Cycas revoluta, Hedychiums, Crinums, all the Ficus, including Parcellii, palms and roses—teas and hybrid teas, all do well in the open ground, and splendid specimens of each are to be met with.

Here, on this place, bulbs, such as hyacinths, anemones, ranunculus, and oxalis have the space allotted to them nearly covered; iris and gladiolus well up and will be all cleared away to make room for something else before you can break the ground with a crow-bar in the North. This class of stuff was scarcely known here a few years ago.

Seeds, in spite of all that has been said and written concerning them, are still inclined to be mean, particularly if they are choice, and you have only a few. They mostly came up splendidly, but if they get too dry one will probably lose them; if they get water at the bottom we are liable to lose them; and if they get water at the top we are sure to lose them; and when one does happen to get

them all right they have a fashion of getting small by degrees, and beautifully less, until there is nothing left to remind one of their once happy existence but the label and the pot. Truly they are like the ways of Providence—past finding out. I find I do better with such small seeds as begonias, lobelias, mimulus, &c., by using a handful of small crocks, bits of charcoal, or rough peat, on the top of the pot or pan. Sow the seed and water with the rose. I find they seldom need anything more until they are fit to handle, but even then they are not safe, for about this time along comes a swarm of caterpillars and bugs, snails and slugs, and I often wonder we don't all go crazy at once and be done with it.

Pansies, Viola, Petunias, Dianthus, Coreopsis, &c., are all pricked off in boxes to be stowed away from frost—if we have any—and planted out about the middle of January, some to do duty all summer, and others to be burned up as soon as real hot weather comes.

The thermometer has not registered lower than 60° outside at six A. M., this season, as yet (Nov. 15); Pointsettas are ablaze outside in the ground, roses in basketfuls, and coleus look better than they did in July or August.

EDITORIAL NOTES.

SINGLE DAHLIAS.—The new race of Single Dahlias, which is commanding so much attention in Europe, has not yet made its appearance to any extent in our country, but Mr. Wm. Falconer writes to the *American Garden* for November, from Cambridge, Mass., that "Mr. Cullingford, of London, an amateur horticulturist of most refined taste, sent me, last spring, some seeds of single dahlias saved from his own collection. These seedlings are now in blossom, and display a general beauty and excellence at once gratifying and surprising."

PHILADELPHIA FAIRMOUNT PARK.—Philadelphians cannot boast of the high condition of many of her public works, but they take comfort in considering that they get more for their money than people get elsewhere. Horticultural Hall and its beautiful surroundings, only cost the city of Philadelphia $15,000 in 1882, and the whole of Fairmount Park only $95,000, though it has 2200 acres. On the other hand, Central Park, New York, only one-third its size, had $400,000.

ROADS AND TRAVELING COMFORTS IN CHINA.—Mr. Maries continues in the *London Garden* his remarkably instructive sketches of Chinese travel. Of the roads he says: "I went by steamer to Kuikiang and was favored with the use of a nice bungalow on the mountains, inland from that place. There are are no decent roads in China; the main path is generally only about six feet wide, and often paved with irregularly shaped stones, or rather was once upon a time; now there are a few stepping stones for a few feet, then a few yards of mud. If a horse or coolie chair comes along, one has to either step down into a mud rice field or dispute the way with the comers. Near Kuikiang the Chinese are not of the best disposition, and I avoided the villages and generally turned off the road if I saw many people coming. I was stopped several times by the natives and told I had no right there, or that I must go back. Once I had all the plants I had collected taken from me by a priest and a gang of cut-throat-looking fellows. I, however, fetched them again at night. Once I was surrounded in a village, and I thought the curiosity of the natives would have resulted in stripping me of all I had. The frightful diseases with which some of the Chinese are afflicted, it is sickening to behold. The miserable wretches had made me almost mad to be clear of them. Most indescribable skin diseases, others just recovered from small-pox, others with toes and fingers completely rotted off with disease. I have many times walked two and three miles to avoid the villages, and even then a crowd would follow me, shouting "foreign devil," etc. The Kuikiang Mountains extend from north to south of the Poyang Lake."

ROSE CENTENARIO DES CAMOENS.—The *Journal des Roses* is very enthusiastic over this new rose.

NEW GOLDEN FEVERFEW.—We can put up with a Latin generic and specific name, in consideration of the many advantages of an uniform system, though the name be hard; but "Matricaria eximia nana aurea crispa compacta flore pleno" seems a little too much of a good thing. It is among the latest of German novelties.

WHITE TIGRIDIA.—Everybody knows the pretty summer flowering bulb, the Tigridia or Tiger flower. We have the red Tigridia pavonia, and the yellow conchiflora. The white, according to *Revue Horticole* was raised and recently sent out by M. Hennequin, of Angers, France. In habit and general aspect it is said to be similar to the older variety T. conchiflora, from which it seems to have sprung. Its flowers are large, of a dead or pearly-white color, marked at the base of each

division with large spots of a reddish brown or chestnut color on a yellowish ground, forming a fine contrast with the white of the petals. The style column is of a bright yellow, of the form of a long hollow sheath, terminated by three mottled plates enclosing the style within them. This should be quite an acquisition to our summer borders and a good companion for the already known and admired varieties of this showy family.

SCRAPS AND QUERIES.

EUONYMUS RADICANS.—It is surprising that for all the attention which has been called to the creeping burning bush, there should yet be so little inquiry for it. A correspondent says: "I should be glad to know that its value for walls was appreciated. I am told that there is a two-story house in Nashville completely covered to the eaves with it, and that it is very beautiful."

DATURA ARBOREA. — A lady of Charleston, S. C., writes that she saw near that city a plant of Datura arborea fully ten feet high and broad in proportion, literally covered with fragrant blossoms and buds in great quantity. Such a plant is naturally a treasure to its owner. This plant is often grown in northern gardens as a tub plant, to be protected in winter from frost, and is always appreciated. It deserves, however, a still wider popularity.

TRANSPLANTING SEASONS.—"R. O.," Philadelphia, writes: "Will you be kind enough to inform me which season you consider best for transplanting trees—spring or fall? It is held by some that fall is the best time, while others claim that spring is preferable."

[This is one of the questions that can never be finally decided. If trees are in good condition when planted, and are planted properly, they will only die from what happens to them after they are planted. If the weather which follows is "awful," there may be ill-success with the planting. It may be a terribly cold winter, or a terribly hot summer. As we cannot tell in advance, one season is about as safe as another. One thing we all know, which is that spring is a more busy season than fall, and on this account in our own practice we plant all we can in fall. On this account it is the best for us, and, when the winter does not prove too severe, we find it the best on all other accounts.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

SEASONABLE HINTS.

The temperature of the greenhouse at this season should be maintained at about 50°, allowing it to rise 10° or 15° under the full sun, and sink 10° or so in the night. Though many of our practical brethren differ from us—men, for some of whose opinions we entertain the highest respect—we do not recommend a very great difference between night and day temperature; we think 10° ample allowance. It is following nature, no doubt, but we would rather strive to beat nature. She can not make the specimens we do, nor flower them so beautifully or profusely; and in many other respects we think the practical gardener can much improve on her red tape notions and old-fashioned courses.

Many plants will seem to be full of roots, and the temptation to repot will be very great; but if a plant is desired to flower freely, the fuller of roots the pot is the better. Continual pot—tering is the bane of plant culture. If the soil is so very much exhausted that the flowers are likely to be small and poor, a half inch of the old soil in the pot, on the surface, may be replaced by a top-dressing of rich compost. But watchfulness must be afterwards exercised, or the plant will get over-dry, as the loose soil on the top will often appear wet when, in reality, all below is as dry as a powder horn.

In many greenhouses we have noted lately more attempts at a tasteful arrangement of the plants, than used formerly to prevail, when the only object of a greenhouse seemed to be a mere store place for border flowers during winter. This is very commendable, and might be much improved on.

Every few weeks the plant may be reset, and the house made to appear quite different. In the end, where the lowest plants once were set, now the taller ones may be placed—here a convex group, and there presenting a concave appearance. Drooping plants on elevated shelves, and hanging baskets from the roof, make little paradises of variety in what was once unbearable monotony.

Gardeners often wish to know the secret of maintaining a continued interest on the part of their employers, in their handiwork; and this is one of the most potent—continued change and variety in the appearance of everything. Beautiful flowers, graceful forms, elegant combinations, all developing themselves with a healthy luxuriousness and everchanging endlessness, will wake up an interest in the most indifferent breast.

The ability for this tasteful arrangement is often one of the chief differences between a good gardener and a poor one. Before us is a photograph kindly sent us by Mr. Charles Joly, of Paris. It represents a group arranged by the gardener to Baron A. Rothschild, and, though of materials found in most first-class greenhouse collections, it is rarely that one sees such a beautiful combination from the same materials. As far as we can judge from the photograph, the mass represents a cone about seven feet high. It is capped by what appears to be a plant of Alocasia metallica; around under the leaves of this, so as to hide the pot of the Alocasia, are some half-dozen baskets of Nepenthes. On the ground there are arranged broad leaved Caladiums and narrow leaved Dracænas and Pandanuses, with Dieffenbachias, Pothos, and other plants, which not only by color, but by the contrasts with the leaves of different sizes, are made to give harmonious variety to the whole group.

It is impossible to conceive of anything more effectually arranged, and we do not wonder that our kind correspondent, Mr. Joly, thought it worth photographing and sending across the Atlantic. All may not have these plants of course; but our idea is to call attention to the fact that great beauty of arrangement may be contrived out of very simple things.

The more freely a plant is growing, the more water will it require; and the more it grows, the more sun and light will it need. In all cases, those which seem to grow the fastest should be placed nearest the light. The best aspect for room plants is the south-east. They seem like animals in their affection for the morning sun. The first morning ray is worth a dozen in the evening. Should any of our fair readers find her plants, by some unlucky calculation, frozen in the morning, do not remove them at once to a warm place, but dip them in cold water, and set them in a dark spot, where they will barely escape freezing. Sunlight will only help the frost's destructive powers.

COMMUNICATIONS.

BOUVARDIAS.

BY MISS W., QUAKER HILL, N. Y.

I would like to recommend to all lovers of beautiful fragrant flowers the Bouvardias Humboldtii and candidissima. They are such clean handsome-looking plants and their fragrance will perfume a room. A. Neuner is beautiful, but if I could have but one shoot I would choose one of the former. They are all profuse bloomers. Will some kind reader of the MONTHLY please inform me how to propagate them? Also the best way of heating a very small plant-room? If anyone has succeeded in using a coal oil stove for the purpose, please state the kind.

[Bouvardias are raised by making cuttings of pieces of the roots about this time of the year. The small plants are set out in May, and make strong blooming plants by fall.

There is so much uncertainty about the best way to heat small rooms or plant-houses, that we should be glad if some reader who has had actual experience would reply to the lady's question.—Ed. G. M.]

IMPROVEMENT IN ACROCLINIUM.

BY J. C. SCHMIDT, ERFURT, PRUSSIA.

I have taken the liberty to forward to your address, by to-day's parcel post, a bunch of Acroclinium roseum, and roseum flore pleno (J. C. Schmidt), the latter being a novelty which I succeeded in raising.

The single roseum (Acroclinium Hooker), a native of Texas, was imported to our country not so very long ago, and immediately gained the favor of nearly every one who saw it. Especially our florists found it to be a very good addition, and used the little pink-colored, charming flowers freely to fill baskets, arrange bouquets, and for general flower work. Already—six years ago—I discovered amongst the Acrocliniums which I cultivate on a space of ten to twelve acres, single plants, the flowers of which showed a small inclination to fill.

These few plants I picked out, and with the greatest care I selected again and again the proper plants to produce, by-and-bye, a double-filled flower.

Now I have succeeded in getting this novelty nearly constant—about twenty-five per cent. of seeds only, sown last harvest from good filled flowers turned out single flowers—and after a period of six years' unceasing care, I offer my new Acroclinium roseum flore pleno (J. C. Schmidt) as a very valuable addition to the class of everlasting flowers.

The single Acroclinium being a very favored flower, without which the composition of flower-work can not be thought of, the new Acroclinium roseum flore pleno will doubtless obtain double the favor from consumers, similar to Helichrysum and Xeranthemum, of which flowers the filled varieties are always preferred to single ones.

Acroclinium roseum flore pleno (J. C. Schmidt.)
FRESH CUT FLOWERS.

The demand for material to work wreaths and bouquets of dried flowers is increasing from year to year, and every good novelty in this department is generally accepted with great joy.

[Mr. Schmidt is in error in regard to this pretty plant being a native of Texas. It is an Australian. In America those who prepare annuals for bedding out in May, often make good use of the Acroclinium. It is very beautiful even in its natural condition. In its present shape it will be still more desirable.

DRIED FLOWER.

In a botanical point of view the improvement will have a special interest. Even those with little botanical knowledge know that a composite flower, such as this, asters, dahlias, and so on, is not a single flower, but a mass of small flowers. To form a compound flower, we may imagine a long branch, with a flower in the axil of each leaf twined in a circular manner round the branch; but in the compound flower nature draws the elongated branch down, and coils it around, as we would make a coil of rope on the floor. We may assume that the flowers would not be as large as if they had been left to grow on an elongated branch, nor is the leaf in which the flower would be axillary expected to be so large. Indeed, in many composite flowers all trace of the leaf is lost, and in others it only exists as a mere scale beneath each floret. In the original Acroclinium we find the original leaf at the base of each floret; in this improved form this primary leaf, or scale, has developed until it is very nearly as large as the first tier of metamorphosed leaves, usually known as the involucre. Usually in making "double" flowers nature operates on stamens or petals. In this case the flowers are unchanged, but the leaf scales have grown up among the florets. It is the only case of the kind we remember in the vegetable kingdom. The

original single flower is not shown in Mr. Schmidt's article.—Ed. G. M.]

COST OF STEAM HEATING.

BY AUGUST D. MYLIUS, DETROIT, MICH.

I have had many inquiries about heating with steam during the summer and autumn. To answer all would take much time, and perhaps would not satisfy every one. I can say that steam heating will, I think, give more satisfaction uniformly than hot water or any other form of heating. At least, I am well satisfied with mine. I have two boilers in use now. It is best for those wishing to put in steam to get a good steam-fitter to do the job, and have him warrant everything to work satisfactorily. I had my steam-fitting done by a good mechanic who warranted his work to give satisfaction, and so it did. There are good steam-fitters in every city who can do the same. The price for steam heating is about one-third less than hot water and gives just as good or better satisfaction. Those who intend to put in steam should see or write to a steam-fitter, tell him how many and how large are the houses you wish to heat. Better to show him the houses before making a contract; then he can give an exact estimate of cost to fit them with steam. The boiler should be ordered by the steam-fitter, who knows just what is needed. One of my boilers is from Pierce & Co., Buffalo, N. Y. It is an upright, extra made for heating purposes. The other is a horizontal boiler, made in Detroit by Stephen Pratt. The first cost, complete, $400; the second cost (boiler alone, no fixings) $200. Of course the first heats double as much as the other. The two heat six large houses. All complete in heating order, pipes, boilers, &c., cost me for the six houses about $1,500. The houses are 64x24 feet each.

PHARBITIS LEARII.

BY CHARLES E. PARNELL.

Pharbitis Learii, or as it is more generally known and cultivated under the name of Ipomœa Learii, is a splendid evergreen climbing or twining plant, belonging to the natural order Convolvulacæ. It is a native of the beautiful and fertile island of Ceylon, from whence it was introduced in 1839. It is a beautiful evergreen species, attaining a height of from twenty-five to thirty-five feet, the shrubby stem being covered with a hairy pubescence. The leaves are variable in form; most frequently they are cordate, but occasionally they are three-lobed and of a deep green color above, while underneath they are covered with a whitish pubescence, and the beautiful deep purple-blue flowers are produced in clusters from the extremities of the lateral shoots. They are very abundantly produced during the season. In color they are of a rich deep purplish-blue, with five conspicuous bands of a lighter hue.

Although this plant is usually described as a greenhouse climber, yet for training on pillars or trellis work in the open air during the summer season its value is beyond all question. Good, strong plants, placed in a well-prepared border, grow with extreme rapidity and great luxuriance, and soon cover an extensive space and produce flowers in immense quantities; and it is a fact worthy of remembrance that this plant will stand our hot, dry summer without sustaining the least injury, and is, moreover, perfectly free from all insect pests.

In order to flower this pretty climber to perfection in the open air during the summer season, a good, strong plant should be placed in a well-prepared border about the tenth of May, where, with a little attention as to training and watering, it will soon produce very satisfactory results. On the approach of frost it can be cut back, taken up and carefully potted, and if placed in the greenhouse in a temperature of 48° or 50° and a light situation, it will be found to be of value for another season.

The Pharbitis can also be grown as a greenhouse climber where it will produce very satisfactory results, if given an abundance of room for its roots, a compost, of two-thirds well-rotted sods, one-third well-rotted manure, and during its season of growth an abundance of water at the roots. At this time also it should be freely and frequently syringed. After its flowering season is over it should be well cut back, and during the winter water should be sparingly given.

The Pharbitis can be easily propagated both by seeds and cuttings; cuttings are best taken from the extremities of the flowering shoots. By this method the plants will flower much sooner, for if the cuttings are taken from the lower branches they will be found to require a considerable quantity of space before they produce many flowers. The seed can be sown in a well-drained pot of light sandy soil at any season of the year, the preferable time being March or April. Keep the soil moist and shade from bright sunshine, and as soon as the young plants become strong enough to handle, carefully transplant into four-inch pots and keep close and moist until well established; then gradually expose to the air, shift into larger

pots as often as it is necessary and plant out in the open air, when all danger of frost is over.

[Mr. Parnell does not in the least underrate the beauty of this fine plant and its great merits for summer decoration in American gardens. It belongs to the class popularly known in America as the "Morning Glory," from its early blooming peculiarities. It usually closes before midday. The editor has not seen a plant for many years. His recollection of it as a greenhouse plant is that it was a great favorite with red spider. — Ed. G. M.]

EDITORIAL NOTES.

CHRYSANTHEMUMS AT FAIRMOUNT PARK, PHILADELPHIA.—The collection at Fairmount Park deserves more than the passing notice of the daily papers. On a recent visit we found them to comprise probably the grandest collection in America. We believe it embraces nearly two hundred varieties, some having flowers actually six inches across, and others as small as an English daisy. There was also every conceivable shade of white, pink, yellow, red, and purple among them. The plants were remarkably well grown, being trained up to single stems, but pinched back in their earlier growth stages to make them bushy. Some were three feet high, and nearly as wide. The Gardener, Mr. Minguey, is justly proud of his success as a grower of Chrysanthemums. The grand display is made in one of the large houses devoted to bedding plants in the spring. The effect on Chrysanthemum culture in Philadelphia is very marked, and the florists who grow Chrysanthemums have been more than usually patronized.

Fairmount Park, comprising 2200 acres, is so large that the money for maintenance and improvement would form but a thin spread if laid over the whole. The plan of the landscape gardener, Mr. C. H. Miller, to have at least a few points very superior, is a very good one. His beds of foliage plants in high keeping, have been highly praised by the citizens the past few seasons, and this effort with the Chrysanthemum has been another illustration of the value of doing at least some things well.

DIAMOND TUBEROSE.—Our readers will remember that it was charged by Mr. Thorpe and Mr. Henderson in our columns, that they had good reason for believing that the "Diamond" was nothing but the "Pearl" under a new name. As about that time the introducers thought proper to withdraw it from sale, in order to test it another year, we did not think it necessary to print the articles sent us in full. But as we see the plant again advertised, it is only proper to remind our readers that the original charge has not been cleared away.

POTTING PLANTS.—This is an operation which every beginner considers himself skilled in, but which is, nevertheless, often badly performed even by practical gardeners. The first point to be noticed is properly draining the pots. When a suitable outlet for the superfluous water is not made it is hopeless to expect success, for no plant can thrive in sour soil. In draining the smallest sized pots one crock (piece of broken pot) over the hole in the bottom, with the concave side downwards, covered with the roughest of the soil, is generally enough. Indeed, a little rough soil in the case of strong-growing, strong-rooting plants is often enough. For plants in 6-six pots one large crock covered with rough lumpy soil may be enough for Balsams, or even Fuchsias, when growing rapidly. For Heaths and plants of a similar nature, small crocks carefully arranged to the depth of fully an inch should cover the central one, and over the small crocks a little moss, or the fibre from the peat or loam, is necessary to prevent the soil stopping the drainage. For a 12-inch pot from three to four inches depth of drainage will be necessary, and more according to size.

Having drained the pots, the next thing is placing in the soil. When the smallest pots are used for potting cuttings or seedlings enough soil should be placed in the pots, and pressed firmly down, that when the roots of the plant to be potted rest lightly on it the part of the stem which was at the surface of soil before may be fully a quarter of an inch below the rim of the pot. Holding the plant in this position, in the centre of the pot, with the left hand, soil should be placed into the pot with the right, and pressed down firmly and level, the surface of the soil being a quarter of an inch below the rim of the pot. This space is for holding water. When the plants are to be taken out of cutting boxes each should be lifted out carefully with a good ball of earth, and only as much being carefully removed without bruising the roots as will reduce the ball so that it may be easily introduced into the pot intended for it.

When plants are to be shifted the same rule should be observed. Plants do not need shifting unless the soil in the pots is well occupied with roots, and it is considered desirable or necessary to increase the size of the plants. When the plants are turned out of the pots the drainage should be removed, and any unoccupied soil carefully picked

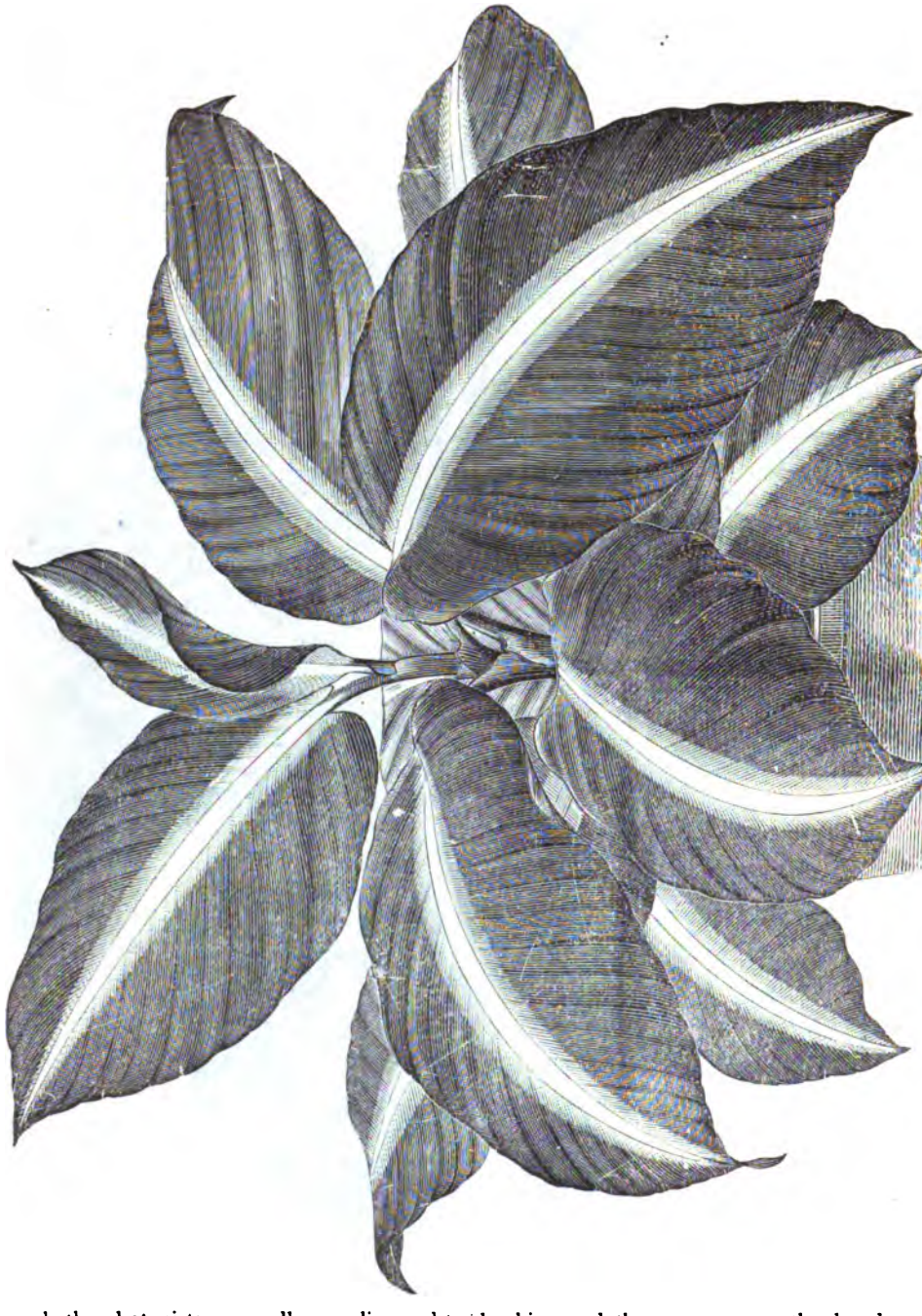
off. It should then be placed on the soil (which has been put in the pot and well firmed down previously), and fresh soil packed, either with the fingers, the ball breaking, and so destroying the roots. When a plant is potted the new soil should always be put in as firm as the old ball is, or when the

Dieffenbachia Carderi. (See page 12.)

or a blunt piece of wood, rather firmly. Loose soil holds too much water, and when plants which are potted loosely are turned out there is danger of water is applied it will run through the loose soil and leave the firmer portion, where the roots are, too dry.—*London Journal of Horticulture.*

NEW OR RARE PLANTS.

TWO BEAUTIFUL LEAF PLANTS—DIEFFENBACHIA CARDERI, AND D. LEOPOLDII.—We do not know whether botanists generally are disposed to admit any substantial difference between Dieffenbachias and Caladiums, but, as they have usually a difference of habit, it is a convenience to plant cultivators to keep them separate. A great variety of beautiful foliage is found among the Dieffenbachias, and they are among the handsomest of this class of warm greenhouse plants. They were



Dieffenbachia Leopoldii.

both introduced by Mr. Wm. Bull, of Chelsea, London, from South America, a few years ago, and proved very acceptable to English plant lovers. D. Carderi is described as having oblong-ovate leaves, spreading or becoming somewhat deflexed, of a rich dark green, strikingly blotched and variegated. Owing to the ground color and the variegation being about equally distributed, the plant is exceedingly striking and attractive. D. Leopoldii is a plant of resplendent beauty. The leaves are oblong-ovate, of a rich deep lustrous satiny green, traversed by a broad and stout ivory-white rib, which is bordered on each side through its entire length with a whitish band, and shows in strong contrast to the color of the leaf surface, producing a marvellously fine pictorial effect. It is one of the most handsome of the Dieffenbachias yet introduced, and was one of the twelve new plants with which Mr. W. B. gained the first prize at the Royal Horticultural Society's show, held at Preston in 1878, and the first prize at the International Horticultural Exhibition, held at Ghent in 1878.

DOUBLE GLOXINIAS.—The latest novelty in double flowers, is announced by the *Revue Horticole*, as Double Gloxinias. They ought to be highly prized if the double character is in any regular form. They were raised by a gardener in Hungary.

SCRAPS AND QUERIES.

SPRUCE OIL LIQUID.—Mr. G. Geduldig, of Norwich, Conn., writes that he has used the fir tree oil introduced by Mr. Rolker, on plants infested with Scale, and finds it to "work like a charm."

AZALEA MISS BUIST.—One of the last of the late Robert Buist's many contributions to improved garden flowers, was a seedling azalea, the stock of which was purchased by Mr. B. S. Williams, of London. It has just been placed on the market, and is described as of the amœna type, but is pure white "and a model as respects form."

THE DOUBLE BOUVARDIA.—R. L. Templin, Calla, O., writes: "A few days ago, while visiting a neighbor florist, I was shown a very fine bed of A. Neuner Double Bouvardias, containing 150 or 200 plants, that were propagated from root cuttings.

There was not one single flower in the whole lot. Is it generally known that the double varieties will come true from root cuttings? When I received my first plants from the originators, they sent me a card stating that they could not be grown from root-cuttings, as they would come single. I would be glad to hear from some others who have tried growing them from root cuttings."

[As a general rule plants which originate in branches, known as sports, will not come always true from root cuttings. Many kinds of variegated plants will not reproduce the character by root cuttings. It would be well for an originator of a new variety in this way to caution, that disappointment might not arise from root-cutting plants. As regards this Bouvardia, we have known them to be raised from root-cuttings, and always so far, with the reproduction of the double form.—Ed. G. M.]

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

CELERY CULTURE.

BY PETER HENDERSON.

I notice at page 366, of the December number of the MONTHLY, an article on celery growing by Mr. A. D. Mylius, of Detroit, Michigan, in which he says that he sows the seed in a hot-bed the 1st of March. That practice is no doubt perfectly correct for his section of the country, but he should not have set that date as the proper time for sowing, without a warning that in any other section where the season is longer and the temperature higher, that if sown in a hot-bed on the 1st of March the crop would be destroyed by its running to seed. Our practice in the vicinity of New York is to sow in the open ground about the 1st of April, and plant not sooner than the 15th of June, and in particularly fine growing seasons we find that even

when sown at that date a few plants will run to seed, and I am satisfied that if sown in our latitude or in any similar one, in a hot-bed on the 1st of March, a large proportion of the crop would run to seed. In Britain the practice is almost universal of sowing in hot-beds about the 1st of March. There of course it is a necessity, because the temperature is so much lower that it requires a longer season to mature. There is no doubt that the European practice of sowing in hot-beds is the cause of a great deal of mischief here from the fact that our great variety of climate is not taken into consideration by gardeners who have had European experience. I think it is safe to say that we have at least a score of complaints every season of celery running to seed from seeds purchased of us and other seedsmen. In nearly all cases, however, we find that the seed has either been sown in a hot-bed, or, in some of the extreme Southern States, sown too early in the open ground. Hence in giving experience in a special locality one should always be careful to state that that practice may not be proper for another section.

Michigan is proving to be an excellent latitude for celery culture. Last season large quantities grown at Kalamazoo were sent to the New York market—and perhaps also from Detroit—that was ahead in quality of anything we had raised here that season, owing to the unprecedented drouth. As a rule however, celery would not pay to ship that distance, because it is rare indeed that our crop fails in this vicinity. I have only seen it fail twice—as it did in 1881—in thirty years.

BEET WINE.

BY M. AUGUSTE DELEUIL, GARDANNE-LES-MARSEILLE, FRANCE.

All the world knows of the ravages which the Phylloxera has made on the European grape for some years past. The depredations of this terrible pest have been in no ways exaggerated. Ingredient on ingredient, process on process, have been tried, the experimenters having little more than their labor for their pains. In view of this evident result, some, with the encouragement of some learned societies, have had the courage to propose the total abandonment of the culture of this once precious plant, because they have discovered all they desire to replace it in another vegetable. This is neither more nor less than varieties of the common Sugar Beet, which there is now no doubt for wine-making purposes, can be made to succeed to the famous heritage of the vine. The beet furnishes a first class alcohol. The red beet, strong in sugar, produces by fermentation a wine which has been found fully the equal of any produced by the grape in the meridian of the Southern Cross.

In all worldly troubles there is usually something occurs to give relief, and it will only be another instance of the beneficence of this law, if now, with the inevitable fate of grape culture in the old world clearly before us, the beet should arise for all the purposes of wine-making, to give relief to the distressed grape grower.

SOME REMINISCENCES OF THE CALADIUM ESCULENTUM.

BY MRS. D. M. W., CHARLESTON, S. C.

On my arrival in Charleston, S. C., more than forty years ago, Tanyas, "Caladium esculentum" were commonly sold in the Charleston market as a vegetable; and among other things sent by a friend as gifts to us as strangers, on our first going to housekeeping, was a bag of tanyas. What was I to do with them? My Irish cook declared them to be nothing better than rotten potatoes, she "knew the nasty things well." So they laid on the floor of the piazza till my husband came in; he said they were very nice—"Boil them a long while as you would potatoes, and eat them with plenty of butter; make them into soup with a good piece of beef." All was done as he ordered, a great dish of greyish white mealy balls appeared on the dinner table, enormous things, tinted with blue and red—very discouraging to look at, worse to eat.

The next day tanya soup was carefully boiled with all sorts of condiments to make it palatable; that was better, but two or three spoonfuls were sufficient, and we have never tried tanyas as vegetables since, though I planted in my garden what remained of the brown rough balls and reaped a harvest of delight in their lovely growth, which I had then never seen in Europe.

On what is called the King Street road, the same summer, on the edge of a very muddy ditch, intersected by another equally black and oozy, grew, apparently wild, a magnificent growth of tanyas. Year after year they increased and multiplied, till they covered both ditches and much of the surrounding field. In those far-off times of which I write the negroes had a legend that tanyas were originally brought by them from Africa, and certainly to this day they are eaten by them, and a patch may always be found in their gardens.

[The editor's recollection of roasted tanyas is not unfavorable.]

EDITORIAL NOTES.

A NEW "YELLOWS" DISEASE IN THE PEACH.—English journals have a good deal to say about a new disease which has recently broken out among peaches, and which they call "the yellows." As it has always been stated that what Americans call "the yellows" does not exist in England, it may be as well to note here that what they now call by this name is not the American disease. It is thus described in the London *Journal of Horticulture:* "The trees were afflicted in many instances with the 'yellows'—that is to say, the points of the young growths were yellow instead of a dark healthy green color. This may be thought a rather singular name for a complaint, but those who are acquainted with the symptoms know the crops obtained from such trees are of comparatively little value till these same 'yellows' are prevented. The trees when in this condition, unless too far gone, flower freely and set good crops of fruit, which appear to stone well, but the majority drop when apparently near perfection."

In order to prevent confusion it will be best to call their trouble "English yellows" when we are referring to it.

PEACH YELLOWS LAW OF MICHIGAN.—Mr. T. T. Lyon supplies the following piece of history: "A previous Legislature had enacted a 'Yellows Law' applicable only to the counties of Van Buren, Allegan and Ottawa; and difficulty arising from its non-applicability to other adjoining localities, and from the alleged insufficiency of some of its provisions, a movement was in progress to modify this law and make it general throughout the State. The State Pomological Society was appealed to, at the annual meeting in December, 1877, at Paw Paw, to perfect a draft of the proposed law, and to bring it before the Legislature with its endorsement. It was after the discussion of the motion to refer this matter to a special committee, that Hon. N. H. Bitely, of Lawton, read an abstract of the facts elicited during the discussion, in which he stated it to be his conclusion that it seems inevitable nothing but a stringent law for the destruction of the diseased trees, applicable to the whole State, diligently and energetically enforced, will prevent the loss of every peach tree in the State. Without such a law we may bid a long farewell to this most luscious fruit which has so long been both a source of pride and revenue to the State of Michigan. With such a law, so enforced, the future of the peach will be more hopeful. Mr. Lyon adds that this can only be taken as the conclusion of Mr. Bitely. We are confident, however, that it expressed (perhaps not in a sufficiently guarded manner) the dominant feeling of those in attendance, that the proposed application of the law respecting nuisances to this disease, was legitimate and proper; and that, if we would escape the calamity that had already nearly or quite ruined the peach plantations of an entire county of our 'fruit belt,' prompt and earnest action must be had."

EARLIEST PEACHES IN TEXAS.—T. V. Munson says Musser and Ashby are the earliest. These are followed by Baker and Alexander, Wilder and Excelsior following.

JAPAN PERSIMMON IN THE SOUTH.—It is now some six or seven years since the Japan Persimmon was first introduced into Mobile by distributions made by the United States Commissioner of Agriculture. It has fruited three or four years in succession in the vicinity of Mobile and Pensacola, and found to do well there. Mr. Delchamps has a flourishing orchard in the lower part of the county, and Mr. Langdon has another in the upper part. Mr. D., who is perhaps the pioneer, in experimenting with this new fruit, says that he has three hundred trees, all doing well, and Mr. L. has about one-third as many—his orchard including no less than thirteen varieties, namely, Tanenashi, Hiakume, Nihon, Hatsiga, Yamato, Kurokuma, Royal, Daidaimara, Mikado, Gosho, Goshomara, Imperial and Mino.

HARDY APPLES IN OHIO.—Judge Cheney, of Winchester, says that the most hardy are the Roman Stem, White Winter, Pearmain and Milam.

AMERICAN PEACHES IN EUROPE.—We reprint from the London *Garden* the following letter of a French correspondent, which we are sure will be read with much interest by American peach growers:

"M. Raymond Aurrau, the proprietor of this estate, who, for his remarkably successful cultivation (especially of American vines), has just obtained the prize of honor at an exhibition at Draguignan, was one of the first to plant on a large scale that remarkably early peach, Amsden's June, of which some thousands of young trees have been imported from the United States. In the spring of 1879, a hundred trees were planted at Décapris on the same piece of ground in which a number of Jacquez vines were at the same time planted. In the rich and deep soil of Décapris the Jacquez vine makes the most luxuriant growth, but the growth and development of Amsden's June peach on the same soil is quite extraordinary. Planted three years ago, as one year's grafts of ordinary

strength grafted on peach stocks in America, these trees now have stems with an average circumference of 8¾ inches. The heads of those grown as standards, about 3 feet high, measure over 5½ feet in average diameter. These heads take naturally, and almost without any pruning whatever, the most regularly rounded form. I saw these trees on the 28th of June last, and I may say, without exaggeration, that I have never seen, except in America, peach trees in the open air so well developed at the age of only three years. I never before had an opportunity of witnessing such exuberant growth and such an abundant crop. Every tree this year bore at least 105 pounds of fruit, and there were some on which the crop must have exceeded 140 pounds. At this time (June 28th), at Dècapris, where the winter temperature is lower than that of Hyères and of the sea coast, and where, consequently, fruit does not ripen so early, Amsden's June peach had been gathered more than ten days. The fruit, although too numerous on every tree, was, however, tolerably large, weighing on an average 2½ ounces each. It was particularly well colored, and I ascertained that it was disposed of at the market in Paris at a very remunerative price of from £7 to £8 per 100 kilogrammes (about 350 lbs.). At even half this price the entire crop of these 100 peach trees at Dècapris, which are only three years old, would yield the very handsome sum of from £120 to £160. If we take into account, as we should do, that these trees were laden with far too many fruits, and that the thinning out of the half or three parts of them a fortnight or three weeks after flowering would have had the effect of increasing the size of those remaining to such an extent that the sum total of the entire crop would have lost nothing in weight, we are led to affirm that the amount realized would have been much more considerable.' The fact is, that the fruits would have ripened sooner if they had not been so excessively numerous, and would have attained the normal size and the usual weight of Amsden's June, viz., from 3½ ounces to 4 ounces. Earlier and larger fruit, as is well known, command far higher prices, especially in the Paris markets. I may mention that the same vigorous growth displays itself under the same conditions amongst other early American peaches more recent than Amsden's June, which have also been introduced into cultivation in France, and especially in the south. Of these, Alexander, Cumberland, Musser, Waterloo and Downing are just as vigorous in growth as Amsden's June. They all come from America, grafted on peach stocks raised from seed."

THE LATEST NEW STRAWBERRIES.—A correspondent sends the following account of the latest remarkable new seedling strawberries to a New York paper. It is to be remarked that the descriptions sent are wholly in the public interest, and not from any selfish motive on the part of the writer, as he has not a solitary plant for sale, and does not expect to have for several months to come:

"'Heliogabalus Double Early,' is a large squat berry, with blue eyes and a coy, winning mouth, bursting all over with coquettish sweetness. It is a good grower, but requires judicious tickling with a straw to awaken it to a generous enthusiastic interest in its own cultivation.

"'Reddy the Blacksmith Round Top Seedling,' is a good family berry; but of no use in general society. The last crop was a failure, owing to the name, which weighed heavily on the berry, and retarded its growth.

"'Blue Jeans Late Canadian Songster' used to be fine, but has fallen into dissipated ways, and is more or less stunted, and has an acid flavor, like an old maid whose last hope has just been carried off by a red-headed girl with freckles.

"'Calithumpian Aurora' is a beautiful boarding-house berry, much admired by dealers. Owing to its modest and retiring habits which impel it to grovel on the cold, cold ground, it is enabled to pick up and retain large quantities of sand and dirt, on which account it is sometimes called 'Triumph of Real Estate,' or 'True Grit.' This berry may also be used by careful housekeepers in the place of bath brick.

"'Tuscarora Conquest' promises to develop to such wonderful proportions that two of them, adroitly manipulated by street venders, could be made to fill a box with bottom located about half way to the top. It also promises that each would be sufficient for a short cake. However, it is not great in size. It is probably as small as Conkling's chances of becoming President. 'Tuscarora Conquest' is a slender, low-necked specimen of its kind, and, when feeling well, is productive as a spring poet. The best way to raise it is with a pair of ice-tongs.

"'Fur Tippet' I consider one of the finest berries I have ever seen. This berry is so phenomenally intelligent that it can be trained to jump through a hoop and do light chores about the house."

JUGLANS PRÆPARTURIENS, OR EARLY FRUITING WALNUT.—The California papers have been intelligently discussing this variety of walnut. It has been thought to be a dwarf--probably because small or young trees are full of fruit. Mr. Felix Gillett sums in the *Rural Press*, all that has been said of its dwarf character in these words: "In my opinion, however, the Juglans Præparturiens of France, and the English Dwarf Prolific of America, are the same thing, though it is not clear in my mind why the Præparturiens or fertile walnut has gone in America under the name of Dwarf Prolific. As to who gave it that name it seems that nobody knows. The name is far from being appropriate, and serves only to bring confusion in names, and gives a false impression as to the habits of growing of the tree."

As regards the value of the variety in California, Mr. John Rusk remarks: "We will soon see the day when no other sorts will be planted than grafted chestnuts and Præpaturiens walnuts. To wait from twelve to twenty years for walnuts from

common sorts will not do when you can have them ni bearing in three or four years."

THE "EARLIEST OF ALL" PEA.—There have been "Early" peas, and "Extra Early," and perhaps "Double Extras," but now Mr. Saxton has raised one he calls "Earliest of All." As the patriot says of his flag, "long may it wave." Still we fear there will be some still earlier, for during the past two hundred years the interval from the sowing in February or March to the gathering in May or June, has not yet been bridged. There has been, to be sure, an "early six weeks," but why not an "early six days?"

FLAX IN MEXICO.—Mexico is progressing rapidly, and our exchanges show that numberless industries are being earnestly nurtured. Flax culture is receiving attention. In an article before us the "Dodder" is classed among "insects injurious to flax"—not a bad idea, for Dodder, though a plant, affects other plants much as an insect would.

WHITE ELEPHANT POTATO.—Cuts on English circulars represent this as about the size of an old-time plantation negro's foot. Large vegetables are often more curious than profitable, but those who have to scratch for a living, find much more weight in a bushel of large than a bushel of small potatoes.

FEAST'S SCUFFLE CULTIVATOR.—This vigorous contrivance, first cuts up the weeds, and then by a roller fork behind, shakes out all the earth from the uprooted weeds, by which they are laid out so as to soon dry up.

FORESTRY.

EDITORIAL NOTES.

FORESTRY IN AMERICA.—It is rather surprising that while you may find a hundred men who will write and talk that "something should be done" to increase our forest area, scarcely one looks at the matter practically, to see what can be done, and endeavor to aid those who are actually trying to do something. Such men as Sargent, Warder and Douglas, deserve much more respect from their countrymen than they have hitherto received. They look closely into the actual details of American forestry, and spread the information necessary to set people practically to work to remedy what may in the future be a short timber supply. One may talk till he is hoarse about the patriotism which should plant trees because in a couple of centuries the land will be a desert if they be not planted, when he could get a thousand-acre plot started by a ten-minute talk with one who could see some immediate interest therein. He may write a learned essay elucidating what European governments are doing in the way of planting forests, and yet not take five minutes to remember what is best to be done in a country where every man is, or desires to be, a king.

To our mind there is little more needed in our country, than practical knowledge, in order to encourage forest planting. Sargent has made it plain to us just where the forests are. There is yet a good stock in some places, provided we can get railroads profitably to the locations before they rot away. Warder has indicated what trees will grow rapidly, and make profitable timber in less than a very short lifetime, but beyond all Douglas has demonstrated what it will actually cost to plant forests, and is willing to go to any part of the United States, and for stipulated figures, to either plant and stop, or to engage to care for the plantation for several years. In order that we might write this paragraph understandingly, we asked Mr. Douglas to give us some facts. The letter he sends us is a private one, but in the interest of forestry culture we believe he will not object to our giving the following extract:

"We plant this section for the railroad company. They pay the actual cost of breaking and cross-plowing the prairie, which costs $4 an acre. We prepare the land, furnish the trees, plant them four by four feet, and grow them till they are four to six feet high, and shade the ground till they require a further care or cultivation, and are to deliver 2,000 trees four to six feet high on each acre, for which we receive $30 per acre. In taking contracts for the future we will charge $5 per acre for breaking and cross-plowing the land, as the cost of getting the teams together, seeing that it is properly done, measuring for the different plowmen, paying them,

&c., costs considerable and actually stands us about $5 per acre.

"Then labor has advanced since three years ago, so that we shall add $5 per acre, thus making, including breaking the raw prairie and everything till the trees are delivered over, $40 per acre, getting the $5 per acre at the time of breaking, $20 per acre when the trees are planted, and $15 per acre when they are delivered over.

"When the trees are delivered over they are to be four to six feet, but most of them are much taller, and two to two and a half inches in diameter at the butt, perfectly free from weeds, and not the least particle of danger from fires, as the catalpa leaves are very much like pumpkin leaves, and rot down. They need no pruning as 100,000, four years planted, ten to fifteen feet high, are now shedding their under branches, or at least they are dead and will soon shed off.

"I was to select land for another plantation when I was out last month, but the land that could have been bought three years ago at $2.80 per acre, is now worth $12 to $15 per acre, and on this account he concluded not to purchase. This would not make so much difference as it appears to, as the land will keep on increasing in value.

"We think this a reasonable price, taking all the risks and care ourselves, and if any railroad companies or forest planting associations should undertake it, it would certainly cost more. Of course we would take the contract to plant without the further care—that is, $20 an acre for the trees and planting, or $25 if the prairie is unbroken."

Now, one thing is clear from an effort like this of Mr. Douglas, that he cannot continue to do, as he is doing, unless some one sees that he has a continuous succession of contracts. To get the trees and to prepare the machinery for planting some thousands of acres a year, and then have two or three years of idleness—his young trees go to the bonfire, and his whole machinery disorganized, will not do at all for cheap forestry planting. He must charge more than it is worth for what he does to cover the risk, or abandon the business. It ought to be the business of local or state agricultural associations, or forestry conventions, to look up railroad or mining companies, ship-building or large lumber interests of whatever class they may be, show them that there is a way out of their soon-to-be embarrassments, by profitably planting more, and that a man like Douglas is ready to do the job for them. If any legislation is needed to encourage forestry planting, it is that men like Douglas, who prepare millions of trees, and men to plant them, should be reimbursed by a bounty for the seasons when they fail to get any contracts for their work, and have to let the trees spoil and the labor machine rust for want of use. It is in these directions, at any rate, it seems to us practical encouragement of forestry should take shape.

MAHOGANY IN SAN DOMINGO.—In consequence of the demand for mahogany of late, it has been feared lest the supplies should fall short; we are assured, however, in a report of the Vice-Consul at Puerto Plato, San Domingo, that the diminution in the exports of mahogany is by no means to be attributed to a scarcity of the wood, for the forests are apparently inexhaustible; but it is to be accounted for through the absence of suitable tonnage for charter in the neighboring colony of St. Thomas throughout the year.

THE CENSUS FORESTRY REPORT OF VIRGINIA AND WEST VIRGINIA will now, we suppose, be made as complete as those of any other of the States. In our May number, page 67, we published extracts from a letter from Prof. C. S. Sargent, Special Forestry Agent of the Census, in which he wrote us that for want of funds he feared he "must defer indefinitely, if not abandon, the proposed investigation" of the forest resources of the Virginias. We not only commented on the injustice that would be done these states by such a treatment, but went in person to Washington and laid this matter first before Senator Davis, of West Virginia (who has a business way of taking hold of all matters that affect the development of the Virginias that always leads to practical results), and then with him before other Senators and Representatives from these States. In consequence, action was taken that secured an appropriation, by means of which a forestry report on the Virginias could be made, and now Prof. S. P. Sharples, the assistant of Prof. Sargent, is in West Virginia and Virginia gathering the facts for this report; he has already visited the white pine and black spruce region at the head of Greenbrier and Cheat rivers, the great tulip-poplar, black walnut, white oak, &c., country on Cabin creek and Big and Little Coal rivers of the Kanawha, and on Guyandot waters in Kanawha, Boone and Lincoln counties, West Virginia, gathering additional information from parties informed in such matters about the timber resources of all the Great Kanawha basin. He has also inspected portions of the Blue Ridge and Piedmont regions of Virginia. At this writing, Prof. S. is on the head-waters of the Potomac, along the West Virginia Central & Pittsburg R. R., looking into that finely timbered country.

We anticipate valuable results from these explorations, and hope Prof. Sharples will be given ample time to work up fully a report of the forest resources of these States. Each of our railway lines should see to it that he has opportunity to visit its tributary forests.—*The Virginias.*

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

CAN WHEAT BE CROSS-FERTILIZED?

BY A. VEITCH, NEW HAVEN, CONN.

In the MONTHLY for November, 1882, Mr. Carman writes: "During two seasons past, I have spent much time in crossing wheats. I have been very careful to remove the anthers from each flower while yet they were immature. Whenever they (the anthers) showed a tint of yellow, an indication of approaching maturity, I have destroyed the anthers. Nevertheless, seventy-five per cent. of the heads from plants raised from the crossed seed could not be distinguished from those of the mother plant."

The attempts at crossing as recorded above do not seem to have been successful, and if statements long since given to the public are true they could not have been otherwise. The cause of failure is owing to the fact that wheat, in common with other members of the grass family, is cleistogamous, in all of which cases fertilization takes place while yet the flowers are within the folds of the sheaths. This characteristic can be seen in Vilfa, Leersia and Sporobolus, as well as in wheat; and the remarkable fact also that when the terminal flowers of spike or panicle escape confinement they are less productive of seeds than those which never reach the light.

As having a direct bearing upon this subject, we may be permitted to quote a sentence or two from an article on the cross-breeding of plants by the late D. Beaton, written at the request of C. Darwin. Mr. Beaton says:

"No kind of wheat has ever been naturally crossed, and never can be. When the Royal Agricultural Society talk about the wheat being in blossom, they are just one month behind nature. But what they and the bulk of the country people take for the flowering of the wheat is one of the most beautiful contrivances in nature as means to an end. A departure from the law of nature, as it were, to preserve food for man. The wheat is in full flower, and the seed is fertilized while the ear is yet in the folds of the sheath, before the wheat is in ear. At that period the anthers might be said to be sessile, or to have hardly any length of stamens under them; but as soon as the pollen is shed, the husk of the anther might rot in such close confinement, and endanger the safety of the staff of life, now having just received vitality. To prevent famine for lack of wheat, however, nature alters her common process in this matter. As soon as the anther is emptied of the pollen the filaments begin to grow, and to push up the husk of the anther away from the embryo seed, and by the time the ear is seen the husk is well-nigh out of the scales which enclose the seed, but stops not then nor till the husk is dangling from a white thread, far off from the entrance to the seed-case; and when all dangers are thus provided against, the farmer congratulates himself if the weather is propitious, for his wheat is in blossom!"

Thus it will appear that Mr. Beaton recognizes no middle ground upon which to meet those who believe that cleistogamous flowers can be cross-fertilized, and from the evidence adduced he does not seem to be much mistaken. I cannot speak authoritatively in regard to wheat, but having bestowed some attention upon several of the grasses which belong to this class, more especially the different species of Vilfa, it is safe to say, there is not one chance in ten thousand that they ever cross. Even this slim chance may meet the requirements of those who believe that crossing is a necessity in nature, although taking place only at very long intervals. But there is an uncertainty about this which must be removed, before we can see clearly how much or how little species depend upon cross-fertilization for their continuance in pristine vigor.

THE FERTILIZATION OF CALOPOGON PULCHELLUS.

BY FRANK L. BASSETT, HAMMONTON, N. J.

This plant though not as grotesque as some of the orchids, is not one that will lack admirers. The lover of flowers is charmed by its beautiful appearance, both the single specimen and the general effect in the meadow, while the botanist finds it a subject for no little study.

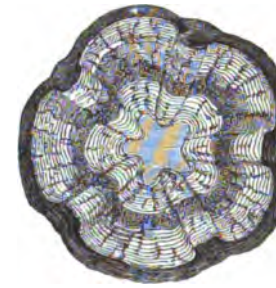
Probably its nearest relatives are Pogonia ophioglossoides and Arethusa bulbosa. It differs in the spiral development of the flower, which brings the lip—the lowest division in its relatives and

most other orchids—in our plant to be the upper lobe. When carefully examined the lip will be found a subject of no little interest. It has near its base a kind of hinge upon which it turns so as to cover the top of the column. In freshly expanded flowers the lip is found quite firmly erect and if bent down with the finger will spring back. But see what it has done, here are the pollinia attached to it. Let us take another flower and watch the operation. Notice how it draws them from their cells and across the stigma. Now take an older flower and we find the lip has dropped spontaneously. From such an operation we would suppose it had something to do with self-fertilization. Last season I tried the experiment of covering a few spikes of buds with gauze nets to see if they would be fertilized. After flowering every pod began to grow and for a time looked as if they would ripen seed. Then all but one began to wither and fall; this one grew and matured. Is it not possible that the lip in this and other orchids was for this purpose originally? We see in the two other genera mentioned as related, the same "beautiful beard" which so nicely draws out the pollinia. These may have once had the same relative position as the Calopogon, but as they are now they could not fertilize themselves this way, the lip being at the lower part.

But this is not a question that can be decided without further experiment. Next year I intend to experiment more carefully and fully on the subject.

EDITORIAL NOTES.

On the Annual Growth of Wood.—A few months ago we were called on to notice Dr. Hough's *Elements of Forestry*, and we stated that cuts made to illustrate one point, did not always represent the whole case accurately. Reference was made to a cut of two year old wood of English oak "borrowed from Rossmasster's work." which showed only four "hair lines" in one annual circle of wood, when there should be a very much larger number; and that the dots should be on the inner instead of the outer circle of the commencing season's growth. In regard to this latter statement two correspondents have written to us, one kindly suggesting that the remark was "inadvertently" made. But it was deliberately written, and was in the writer's mind chiefly from personal examination made during the Centennial year, in comparison with Japan and other woods. That there must have been some mistake the writer now believes from the fact that though very much difference exists in the appearances, the little holes or dots seem always larger in the courses which commence the season's growth than in those which follow, sometimes almost wholly disappearing before the season's growth ends. In other respects, however, the criticism seems just, and we give the following illustration which we have had made for this note. It is from the leading shoot, two years old, of a ten year old English oak, grown at Germantown, and enlarged to a little over double its natural size.



This cut represents with tolerable accuracy a cross-section of a two-year-old piece of wood. The star-shaped outline of the pith is well represented, then we have eighteen "hair-lines" to the apex of the convex bend, and twenty-four to the concave portion of the line. Small dots of uniform size are scattered freely over the whole surface, though in more or less perfect radial lines. When the next season's growth commences the ducts are larger, and seem to be arranged in a more or less broken circle. In endeavoring to show this larger sized duct, the artist has placed the "hair lines" together closer than they are in the copy given him, and this makes the commencement of the annual growth appear of a darker shade than the other portion of the wood. There is really no difference in the color of the wood, or in the width apart of the "hair lines," and there is nothing whatever to show where the growth of one year ends and the other begins except the more circular arrangement of the dotted ducts, their greater number, and slightly larger size. Those who are fond of looking into nature for themselves will find a study of wood with a good pocket lens very fascinating. No two species will be found the same in respect to the arrangement of these ducts, nor what for popular comprehension's sake we have called the "hair lines" as seen in this cut. In some cases the dots are of equal size, spread almost equally over the surface, and giving not the faintest clue as to where the growth of one season ends, or another

begins. Sometimes we may be able to tell with considerable certainty the age of a tree from its "annual rings," but many trees will not give it accurately, and we are not sure but those which seem to give us the data with considerable regularity, often vary from their plan.

In the cut will be noted some features which we do not remember to have ever been referred to by those elementary works which treat of the formation of wood. It will be noted that the outline given by the bark is formed of segments of five circles, and that the bark is of double the thickness and forms a parallelogram where these segments meet. These rectangular blocks of bark are opposite the bays in the star formed by the pith in the center. The center of the arm of the star corresponds to the center of the arc in the outline of the wood. From each sinus in the star to the rectangular blocks of bark, are two nearly parallel lines. The whole piece of wood is thus divided into five sub-triangular segments. The little "hair lines" crossing the two parallel ones, do not connect with the lines enclosed by the triangle, but they are uniform in number with them.

It would be foreign to our present purpose to go into any explanation of the morphological interpretation of the pentamerous plan on which the trunk of an oak tree is seen to be formed. All we have room for is to give a brief explanation of what the "hair lines" mean. There has been a great deal of unnecessary mystery thrown around the formation of wood. We are told about the annual concentric "layer" of wood, and the cambium "layer," and other "layers," as if a new plaster of material was placed over the old wood, which in time became a solid layer stuck over the old one. The idea is much as we might gather from the making of a candle. The wick is first dipped into the molten fat, then drawn out to cool—then dipped in and out again, every time getting larger by the accretion of the cooling liquid. But wood is not made in this way. There is no evidence that anything which has life came directly from inorganic elements. That which is alive came from that which had life before it. All things spring from an egg, and the cells out of which the trunk of a tree is formed are no exception. Every living cell sprung from a parent cell, and the cells out of which this season's wood is formed, came in a direct line from the cells of the year before. The mass of mucilage between the bark and the wood, called by Grew "Cambium," and which is supposed to generate the cells which are to form a new "layer" of bark and wood, does nothing of the kind. It furnishes simply food for the new cells which push out from the mother cells just behind them. Now the "hair lines" in the cut show the successive generations of these cells during the growing season. In our piece of two year old wood, there are twenty-four concentric circles in the year instead of merely "one annual layer," in the sense in which this expression is usually understood.

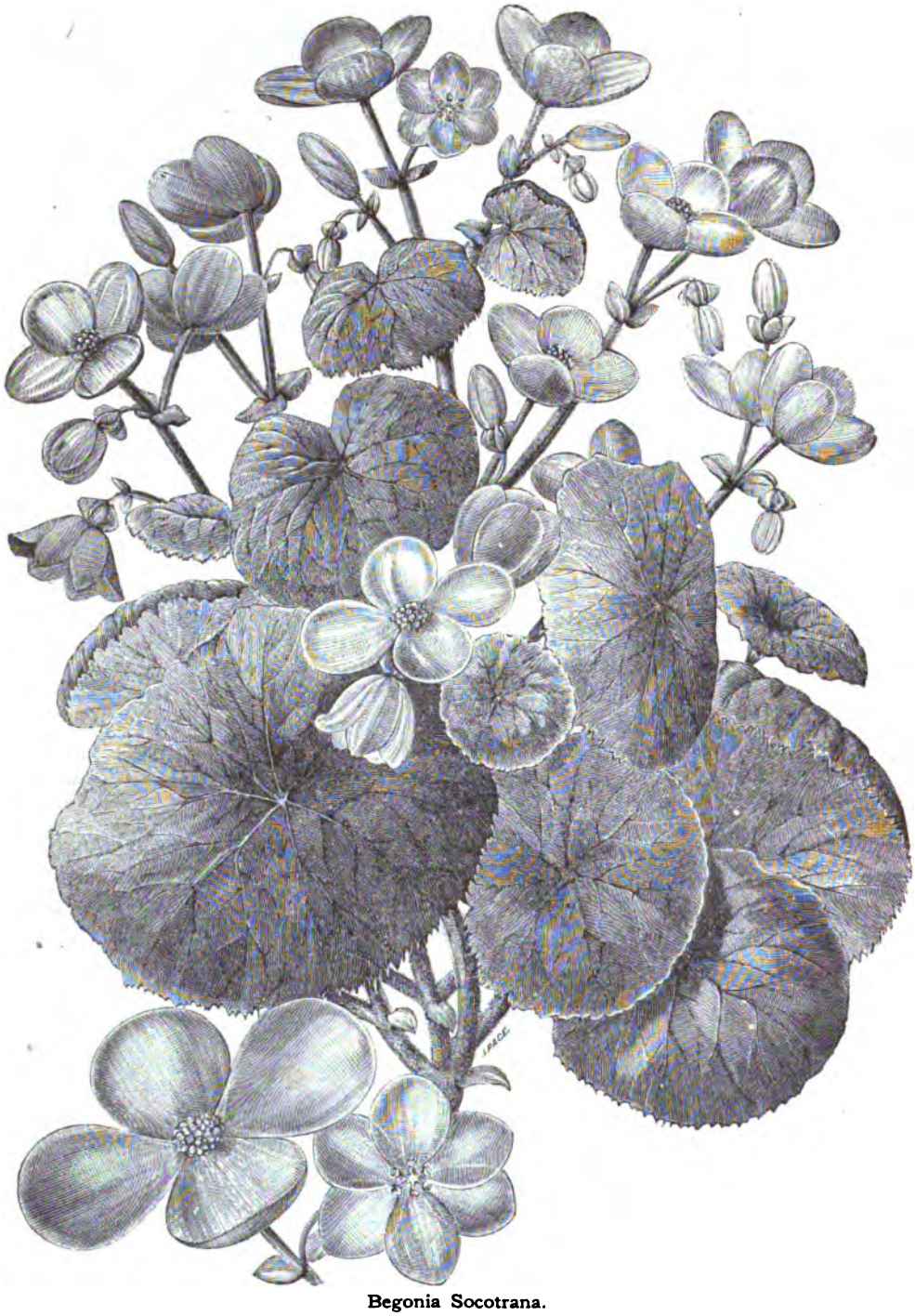
We have purposely avoided in this little sketch, using the language of science to describe this process of forming the annual growth of wood. The object is to convey to those who are unacquainted with this language, some idea of what they may know more about if they care to pursue the study further as a matter of science.

MALE AND FEMALE FLOWERS.—The especial purposes for which the division of all living things into separate sexes was designed, has been stated by the writer of this in former writings and discourses, to be evidently as part of the plan which makes continuous variation lie at the bottom of the continual growth of new species in the world. Further, the writer has shown that the law which operates to produce the separate sexes, is in close alliance with nutrition. There have been enough illustrations given to show that the rule is for the female flowers to be placed where they are the best nourished, and just in proportion as the amount of nourishment to any particular part of a plant prevails, will the number of female flowers in that part excel.

It is always, however, the part of the true searcher for truth to make as prominent observations which seem to oppose his conclusions as those which do. Usually in begonias we find the rule prevail which we have indicated—that is, the male flowers appear on weaker stems than do the female. But we have now a species which seems to go on the contrary side. The female stems appear much weaker than the male ones. The female ones can be readily seen by the young seed vessels which are placed at the base of the petals. The male flowers have no such protuberance. A separate male and female flower is given, enlarged, at the base of the picture, the larger one with the numerous anthers in the centre being the male, and the smaller, with the pistils in its centre, being the female.

We have not yet had a chance to see this species in cultivation. It was introduced recently by Messrs. J. Veitch & Sons, who say of it:

"Begonia Socotrana, a species of remarkable interest both in its scientific and in its horticultural



Begonia Socotrana.

aspect, discovered in the island of Socotra by Dr. J. B. Balfour, from whom we acquired our stock.

"B. Socotrana is a plant of very neat habit, with erect stems eight to twelve inches high, furnished

with orbicular peltate leaves four to seven inches in diameter, and producing a profusion of bright rose-pink flowers, of which the males are fully two inches in diameter. Its great recommendation is its very free blooming character, and its flowering in the depth of winter, when other begonias are at rest, thus prolonging the decorative season of these beautiful plants."

TUBERS FROM GRAFTED TOMATOES.—We have recently noted that the statement that Dr. Beal was authority for the production of tubers from a stem of potato on which a potato had been grafted, was scarcely accurate. From a note in the *Gardeners' Chronicle*, it appears that the experiments were by Mr. Maule and Mr. Alexander Dean "some years ago." Without at all disparaging the statements made, it does seem as if a few more experiments would be desirable.

M. Carrière records in a recent number of the *Revue Horticole* a case wherein he grafted a Jerusalem Artichoke on to the stem of the sunflower. A curious result followed, viz., the formation of tubers on the stem of the sunflower, no tubers being found below-ground, although several were found on the stem just above-ground.

M. Carrière is a botanist of distinction, and regarded as a very careful and accurate observer. It seems incredible that he should say that "he" performed the experiment and noted the results as stated, and yet there be any mistake in his conclusions. The observation is one having such a very close relation to the important practical question with fruit growers of the influence of graft on the stock, that we feel there cannot be too many of these experiments, and we hope they will be repeated next year.

THE HYBRID COTTON PLANT.—We were not among those who ridiculed the idea that two distinct genera, like the okra and the cotton would hybridize. Unlikely as we think such a circumstance to occur, we like to hold ourselves open to the chance of finding seeming impossibilities possible. The okra and the cotton are not distantly related, and hence we were quite willing to say to those who professed they had found such a hybrid, "Well, prove your case." The gentleman to whom we wrote for such evidence declined to respond, and we concluded it was a case wherein darkness was preferable to light. This gentleman of course had no right to respond unless he chose; but as he had taken the newspapers into his confidence, it was but natural to expect he would have been glad of the opportunity to tell all he knew.

We do not know now but this Southern hybrid cotton, is really the myth we have hitherto supposed it to be—but happening to take up recently an account of the botanical congress held in Amsterdam, in the spring of 1877, we find a statement by M. Del Chevalerie, Inspector of Agriculture at Cairo, Egypt, that such a cotton had made its appearance among a mass of okra growing at Chibinel-Kom, in Lower Egypt. It has the habit of the okra plant in every respect—making a straight, scarcely branching stalk, from eight to ten feet high, but yielding cotton instead of the usual kind of okra seeds. The plant is said to produce double the amount of cotton to the acre of the ordinary cotton, though not equal in quality. The plants and cotton were exhibited at Amsterdam, and though none of the botanists present seemed to offer any opinion as to whether it was a true hybrid, beyond what the facts of its surroundings when discovered might suggest, there was no difference of opinion as to its being a totally different form of cotton to anything yet known.

ORIGIN OF THE TREELESS PRAIRIES.—The origin of treeless prairies seems to be referable to annual prairie fires, by the growing consent of those who patiently investigate the matter, and thus one of the great philosophical questions of the past age is being finally set at rest. Up to, say, a couple of years ago the belief of Professor Whitney prevailed that there was something in the finely comminuted soil of the prairies which so firmly enveloped the seed as to prevent the necessary action of the atmosphere in inducing germination. Other hypotheses—all, however, tending to the physical impossibilities of tree growths—were in favor. In the "Proceedings of the Academy of Natural Sciences of Philadelphia," for February, 1881, probably the first philosophic attempt to show the futility of all these hypotheses appeared. It was there shown that there was no more reason why the seeds of strong herbaceous plants should grow and form the well-known flora of the prairies than the seeds of ligneous plants; that herbaceous plants or annuals which could flower and commit their seeds to the earth before a fire flew over them, could spread in spite of prairie fires; but that ligneous plants, which required several years of growth before seeding, could not spread when annually burned down; that, as a matter of fact, trees were being raised by the million on the prairies by nurserymen, and that wherever prairie fires were prevented from occurring, the woodlands did actually encroach on the grassy prairie. This view now receives all the confirmation that is necessary from a

paper by Robert Ridgway in the "Proceedings of the National Museum," wherein he shows that the forest area of the Wabash basin has extended to such an extent that numerous small grassy prairies, which were common at the first settlement of the country, have become transformed to woodland, and that, owing to this encroachment, the forest area of the valley is greater than it was fifty years ago. There are now huge trees of oak and hickory, eighty feet high, on what certainly was grassy prairies fifty years ago. The question of the origin of these prairies being definitely settled, the anthropological one connected with it derives a new interest. As the natural condition of the North American continent is to be covered by a forest growth and this forest growth has been kept down by the agency of annual Indian fires, the Indians must have been here before the subsidence of the waters which covered the prairies, and the annual fires following the regular subsidence alone kept the forests from springing up. It is an excellent illustration of the fact that the settling positively of one important question only leads to the introduction of other and often greater ones.—*Independent.*

TEMPERATURE AND HARDINESS.—We have often called our readers' attention to the fact that the hardiness of plants does not depend on temperature alone. An evergreen will endure a much lower temperature in England than it will in America, while a deciduous tree, killed by a few degrees of frost in England will endure zero in America. In our climate one of the most delightful of very hardy shrubs is Callicarpe purpurea. We have known it to endure 18° below zero, and how much more we do not know. In contrast with this we have the following from the *London Garden:* "In one of the houses in Messrs. Veitch's nursery there is a fine specimen of this old, but uncommon plant, with its long, slender shoots completely wreathed with dense clusters of bright purple berries, a little larger than gun shot. We have hitherto seen this plant grown in a greenhouse, but here it has been grown with great success in a warm and moist house. We have never seen a finer example, and it well shows what a beautiful plant it is when grown well. It will retain its berries throughout the winter, and will be highly ornamental.

FORETELLING THE WEATHER BY THE WHITE PINE.—The *Illustrirte Garten-Zeitung*, of Vienna, Austria, says it is the easiest thing in the world to foretell the weather by observing the common American white pine—Pinus strobus. If we are to expect rain or snow within a reasonably short space of time, the branches of the last two seasons' growth will be pendulous. If such weather be a long way off, the branches will be raised rather than drooping.

COLORED FLOWERS IN THE CARROT.—At a recent meeting of the Academy of Natural Sciences of Philadelphia, Mr. Thomas Meehan remarked that the umbellule of colored flowers in the center of the umbel of the carrot, was represented as usually fertile in Europe and sterile in the United States. He had always found them sterile in the United States until this season, when he discovered that those in the center of the first umbel of the season were fertile. Those in the umbels from lateral shoots were sterile. This had no doubt always been the case, the laterals probably being the only ones examined in former investigations.

PROGRESS OF PLANT KNOWLEDGE.—Hippocrates described 234 species, Theophrastus followed with 500. Pliny knew, as well as can be made out now, 800. Tonmefort, at the beginning of the last century, described 10,146. Many of these had to be united as not distinct enough for modern science, till at the death of Linnæus 7,294 had been described. De Candolle, in the Theory of Elementary Botany, made 30,000 named species. Lindley, in 1853, gave the number as 92,920. Now, in the neighborhood of 150,000 species are known, with possibly an equal number not yet known. Thus figures the *Revue de l'horticulture Belge.*

THE RELATION OF HEAT TO THE SEXES OF FLOWERS was discussed before the Philadelphia Academy of Natural Sciences last year, as noted at the time in these columns, and the important principle developed that it takes less heat to bring forth a male flower, or the male parts of a flower, than it does in the case of the female. This explanation is being found the key to much that was supposed to be among the "unknowables" before. In Europe, or at least, the northern portion of it, where the winter temperature is low till the spring actually arrives, the male flowers. or organs of plants, remain inactive till the weather is warm enough to bring forward the females also, when they receive the necessary pollination requisite for fruitfulness. In other countries, where there are occasionally warm days or warm periods, the male flowers in monœcious or diœcious plants are brought forward to maturity, while the females, desiring a still warmer temperature, linger behind. As a result, some trees, like hazelnuts and walnuts, which produce regularly crops of nuts in some countries, be-

come barren in others. In our own country it was shown, in the items which have been already given, that the hazelnut or filbert often fails in this country, for this reason. It now appears that the same law operates on the production of walnuts in California. Mr. Gillett, of Nevada City, has recently written an essay on this subject, showing that the climate of that State advances the male flowers, while the females remain quiescent. The male catkins are all overblown and have fallen long before the female flowers have been brought forward; and, hence, they are usually barren. In order to secure successful walnut culture in California, they have introduced a variety called the Juglans præparturiens, which requires, both for the male and female flowers, a higher temperature before the flowers push. In other words, the variety blooms later. With this they have great success.—*Independent.*

On Beauty in Birds' Nests.—At a recent meeting of the Academy of Natural Sciences, Mr. Meehan exhibited a nest of the wood pewee, and remarked that, contrary to the statement of most authors, it was evident that no glutinous material was used by this bird in nest-building, but that the structure was held together and bound to the supporting limb by means of cobwebs. He commented upon the adornment of these nests with lichens, and considered the occurrence and uses in such cases of mere decoration without any apparent utilitarian intent.

SCRAPS AND QUERIES.

Oranges and the Weather in Florida.—A correspondent from Orange county says: "I have seen nearly all the large orange groves in the State and find the crop medium to fair, and in great demand @ $3 to $4 per box, ready for shipping. The country is overrun with buyers, and commission merchants predict a great scarcity and very high figures before spring. We have had two sharp frosts, which singed the pine apples and guavas a little; bananas have their tops blackened."

Lawsonia inermis.—"J. W.," Houston, Texas, writes: "I enclose a small branch of a plant I found in a garden here, said to have come from Havana. Will you please name it through the Gardeners' Monthly. The plant is not hardy here; gets killed to the ground by the first white frost, but would be apparently shrubby. The petals are very curiously incurved and wrinkled; it has somewhat the appearance of Lythraceæ, but I have no works to refer to."

[The reference to Lythraceæ is correct. It is the Lawsonia inermis, and is the Henna plant of the Egyptians, and is known to have been a favorite with them for possibly three thousand years. They make from it a dye with which to stain the points of their fingers a pretty pink. We have an impression that the plant, from its fragrance, is known in some part of the South as the "Mignonette bush" or "tree."—Ed. G. M.]

Literature, Travels and Personal Notes.

COMMUNICATIONS.

LETTER FROM M. MAURICE VILMORIN, PARIS, FRANCE.

It was my brother Henry who has received a long deserved distinction by his recent promotion to the Legion d' honneur, of which your most devoted servant is not a member, and will not be for a good many years yet, if he must earn as many times the reward as his brother has, before he was promoted.

I will acknowledge your kind mention of my name, by a piece of interesting intelligence for the readers of the Gardeners' Monthly. Our French National Society of Horticulture are studying the project of an international show, to take place in Paris in May, 1884. The affair is not quite decided upon yet, as the society is not wealthy enough to take the necessary expenses upon themselves, and co-operation from the Government, City of Paris, &c., secured to them. Still there are a good many chances that the scheme will result into the successful achievement of the long thought of idea. Will you kindly insert a few lines in your exhaustive paper, merely relating the fact as an *on dit.* No international exhibition of horticulture is yet

announced for the spring of '84, that I know of, and it is important to us to let people know that something is contemplated in Paris.

[As our readers will no doubt perceive, the above was not intended for publication just as received, but it contains so much that is of interest to us all, that we are sure of pardon for giving it just as it is to our readers.—Ed. G. M.]

ACROSTIC EPITOME OF HORTICULTURE,

In Celebration of this Magazine's Twenty-fifth Year of Usefulness.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

The rosy-tinted morning
has dispell'd the shades of night;
His quick'ning beams the warm sun threw,
in golden rays so bright;
Early in creation's dawn,
when Nature saw the light.

Gardening, the first pursuit,
e'en since the world began,
Amused the famous Homo,
the historic primal man;
Roseate, seem'd the new-born world,
baptized in vernal showers,
Delights sprung up on every side,
with Eve among the flowers;
Eve, angelic maid, who first
assayed the charmer's part,
Naively, coy and beautiful,
enthralled her Adam's heart.
Eden's leafy garden then,
celestially serene,
Refulgent, gay and gladsome,
was a paradisic scene;
Such was the fragrant flow'ry spot,
so blissful, yet terrene.

Marred by mischance, weeds began
t' usurp the place of flowers.
Oh sad the change it brought about
in Eden's happy bowers!
No more could sweets be gather'd then,
without severest toil,
To labor's curse consigned was man,
to cultivate the soil.
Happily, rich rewards still yield,
to delving spade and plow;
Life's hopes remain to cheer us on,
though sweat may damp the brow;
Yet just so much of Eden's left,
to make us happy now.

EDITORIAL NOTES.

PORTRAIT OF MR. BARRY.—A distinguished Western horticulturist writes: "The portrait of friend Barry is excellent. He is certainly worthy of the honor you confer upon him. To him I owe my first lesson on fruit growing. I then bought and still have the "Fruit Garden," by P. Barry, 1863. It was a good book then, and is a good book still."

SWINDLING AGENTS.—Our readers will remember that the publisher of the GARDENERS' MONTHLY put himself to the trouble and expense of capturing and prosecuting a fellow who took money from people under pretence of collecting subscriptions for the GARDENERS' MONTHLY. It was only sixty days' imprisonment for several years' stealing, and the publisher thought it was hardly worth, at this rate, all the trouble to protect people from their own imprudence. It now appears that some such a fellow has been making a grand haul in the interior of the State, collecting for the *American Agriculturist*.

It is amazing that any one will pay money to a stranger, before he gets the goods. Even the most conscienceless tree-agent takes orders only, and generally delivers something before he gets paid. It is wonderful that there should be any money in a fraud like this of the "Magazine agent."

THE LATE MR. EDWARD MEEHAN.—The writer of the brief sketch in the last number, was not without some fear that it might be considered partial, as being dictated as much by affection as public merit. He has therefore thought it might not be without interest to the reader to copy the following from the pen of the Reverend Henry Ewbank, the well known writer on flower garden culture, to the *London Garden*, of Nov. 11th, 1882:

"This neighborhood has just now sustained a loss which, I think, should have a tributary notice in your columns. I refer to the death of Mr. Edward Meehan a few days ago at the ripe age of eighty-four years. For more than half a century he has been in charge of the beautiful gardens at St. Clare, which are rather more than a mile from Ryde. For considerably more than forty years he was in the service of the late Colonel Francis Vernon Harcourt, formerly member for the Isle of Wight, and latterly he has been in that of his brother, Mr. Egerton Vernon Harcourt. Mr. Meehan has passed away from us among the sincere regrets of his numerous friends in this place. It was impossible to know him without forming a great regard for him. He had a kindly open-hearted sort of way which was very attractive. But it is more especially as a gardener and very devoted lover of flowers that this reference is made to him. Mr. Meehan lived for his trees and his plants, and they paid him back in full. It was very interesting to walk with him through one of the most beautiful gardens in the kingdom—his own creation under his master's eye at St. Clare—and to hear him tell how fifty years ago he turned out some magnificent tree—when yet a sapling—from a small pot, or planted some striking shrub which has now attained to great size. There is a

Pinus insignis in these grounds which looks as though a century had passed over its head, and which Mr. Meehan remembered when it was only a foot high. And in addition to this a Judas tree, which is quite worthy of the environs of Smyrna itself; a Paulownia imperialis, which is smothered in a cloud of innumerable bluish blossoms in early spring; an Edwardsia grandiflora which grows over the south side of the house in golden profusion; Fuchsias which are now of towering dimensions; Myrtle trees in abundance; Magnolias which seem to have been cheated into a belief that they are in the Southern States of America; Camellias doing well in the open air; Rhododendrons that must be from twelve feet to fifteen feet high, and which arch over one's head, so as to form a canopy over a broad gravel path; some Arbutuses of the rarest sorts—all these and other things far too numerous for mention in this place, were for many years the subjects of his fostering care, and they were like children in his hands. But it is also as a successful grower of roses, and the winner of the highest prizes at the local shows, that Mr. Meehan will be remembered in the Isle of Wight. The rose was his favorite flower, and no one could permanently wrest from him the supremacy to which he attained in cultivating it. The St. Clare stand for cut blossoms used to be unrivalled in its way, and a very enchanting sight it was when it had just been set up with the greatest assiduity and skill. But all this has now come to an end. The trees and shrubs will not be less beautiful in the gardens of St. Clare than they have been in bygone years, but the voice of the interpreter will no more be heard among them. Mr. Meehan had a strong scientific turn about him, as well as much practical knowledge. In his early days he was very fond of the study of botany, and he gave a great deal of time to it. It was curious to note how, when mind and memory failed him towards the close of his life, the sight of a favorite flower seemed to quicken his drooping faculties at once. When he had begun to take little notice of what was passing around him, and old and familiar things were slipping from his grasp, he was often able to give with accuracy the botanical name of a plant, and to say a good deal about it. His kind employers, Mr. and Mrs. Egerton Harcourt, knew full well how to bring a smile on the old man's face. The best roses of the season were the truest cordials for him, and they were freely sent to him. Quite up to the end roses and other choice flowers were strewn in profusion over his bed, and he seemed to be all the happier for the solace they gave him. His was no perfunctory round of duties carried on for a livelihood, and only for that; it was the devotion of mind and heart to a favorite study of which he never tired through life. It should be noted here that Mr. Meehan has handed on the torch of science to his son, Professor Meehan, a well-known botanist of the United States, and editor of the GARDENERS' MONTHLY, a valuable work on American horticulture. He has left behind him a family of several grown-up sons and daughters, and more than one of them is treading in his steps. The gardening fraternity have assuredly sustained an immense loss in his death, and the Isle of Wight in everything that has to do with trees or plants will not soon meet with his equal."

Another correspondent adds:

"'H. E.,' in his obituary of the late Mr. Edward Meehan, omitted to mention that he is succeeded by his son, Mr. Charles Meehan, as gardener at St. Clare. The latter is a devoted horticulturist, and has many of those genial qualities so happily possessed by his late much lamented father.—*F. E. Goudge, Clapton.*"

RETURN OF MR. AND MRS. LEMMON.—These energetic botanists have returned safely from their very dangerous expedition to the Huachuca range, in the mountains of Arizona. The plants collected are now ready for distribution.

DARLEY DALE.—This is what the printer should have given it in Mr. Harding's interesting sketch in the last MONTHLY, where it reads "Darby Dale."

DR. ASA GRAY.—The following sketch of this estimable man is from *Bowditch's American Florist*, and will probably be new to most of our readers. In regard to the criticism on "School Botany"—or F. F. and G. Botany, there is this to be said of it, that it was written under a great pressure for want of time, and while the author was preparing for a long journey to the old world. Still though not equal to the other works of Dr. Gray, it has been of great service to those for whom it was written:

"Probably every person in the United States and in the British Provinces of North America who has any knowledge of botany, has heard of Dr. Asa Gray and has some idea of the work he has done for his favorite science. At the present time the masses of educated people have a much greater respect for botany than they had twenty or thirty years ago. They have learned that botany does not consist simply in hard names; that there is something more to learn about a plant than its name and description.

"No person in America has done more to bring about this respect for botany than the subject of this sketch. He has done much to show how plants are constructed, how they grow, and how they behave. He has frequently pointed out some of the relations of botany to agriculture and horticulture, and the relations which plants sustain to all of the organic and inorganic world. He has done much to make botany popular, by his essays, by his books, and by his teaching in Harvard University. In 1836, his first text book appeared and was called 'Elements of Botany.' Since then at various times, have appeared others, till now we have 'How Plants Grow,' 'How Plants Behave,' 'Lessons in Botany,' 'Manual of Botany,' 'Field, Forest and Garden Botany,' and the 'Structural Botany.' These are all good, but the best of them it seems to the writer, is 'The Lessons,' and the poorest, 'The Field, Forest and Garden Botany.'

A new edition of the 'Structural Botany' has just appeared. This has been almost entirely rewritten; much matter has been dropped, much added, and the book brought up to the times. He has omitted most that pertains to the anatomy and physiology of plants, and also the illustrated accounts of the prominent natural orders. The work is adapted to advanced students, and it is the best work we have in the English language on the subjects on which it treats.

"In 1842, he was elected Fisher Professor of Natural History in Harvard University, and has occupied that chair ever since that time—a period of nearly forty years. Until within about five years, he taught the classes in botany at Harvard. It may not be generally known that his name appears as first among the list of Professors appointed in the University of Michigan. This position he never filled, but soon resigned to go to Harvard. As a teacher his greatest forte is in directing the studies of his special or advanced students. He is extremely fond of plants and everything that pertains to them. He admires their beauty; he likes to study all of their adaptatiôns to the rest of the world. It is almost impossible for any person to work under his direction and in his presence, without catching some of his inspiration. Nearly all the leading Professors of Botany in the colleges of the United States have been students of Dr. Gray for a greater or shorter period.

"By many he is known for his valuable text books just enumerated, but these constitute but a small part of his work. He has described and named a vast number of flowering plants which have been collected in numerous exploring expeditions. These descriptions appear in numerous government and state reports which need not here be enumerated. These are very valuable contributions to science, but they are almost lost sight of by the mass of people. One of his greatest contributions was a work on grasses, sedges and the like, the former of which are of such great value to the farmer. One of his greatest works is 'The Flora of North America,' begun in 1838. The first two volumes were prepared jointly with the late Dr. Torrey. They extended over the Compositæ. Dr. Gray has lately renewed the work and alone printed part first of a third volume. In 1848 appeared the the first volume of his 'Genera of the Plants of the United States.' The object in this work was to describe a prominent species of each genus of plants in North America. These were accompanied by detailed drawings by Isaac Sprague, the best botanical artist in this country. These drawings are marvels of accuracy and have never been excelled in any land, and probably they were never equalled. The text was prepared with great care. The work only passed through two volumes. It is now rare and costly. Dr. Gray was ready to continue the work, but the artist could not be induced to do so. He thought his drawings were not appreciated.

"In connection with his other work, Dr. Gray did considerable towards maintaining and increasing the botanic garden, greenhouse, etc., at Cambridge. In the early part of his studies, he was an industrious collector of plants, and he laid the foundation for the great herbarium at Harvard. He has made valuable contributions to botany in a host of miscellaneous papers and reviews contributed to the American Academy of Arts and Sciences, to the American Journal of Science and Arts, North American Review, Atlantic Monthly, Transactions of the American Pomological Society and to the numerous Journals of Agriculture and Horticulture.

"In 1837—45 years ago—appeared the first contribution we find in the American Journal of Science and Arts. This was a paper read before the Lyceum of Natural History in New York, October 24, 1836. The subject was "Vegetable Fecundation." Then soon follows other valuable papers—one on synonymy of several plants of the orchid tribe, notes on European herbaria, and a botanical excursion to the mountains of North Carolina. In 1853, Dr. Gray appears as associate editor of the journal last named, and has held this position up to the present time—a period of 28 years. One of his ablest articles was that in which he points out the relation of the Flora of Japan to that of Eastern North America. Almost every work of any merit on botany that has appeared in any country within the last twenty-five years, has been ably reviewed by Dr. Gray in the American Journal of Science and Arts. His own works were reviewed by others. He has taken up many knotty problems in botany, and has lived long enough to see most botanists fall in with his conclusions on the subjects investigated.

"Asa Gray was born in Paris, Oneida county, New York, November 18, 1810. He graduated as Doctor of Medicine at Fairfield College in 1831; received the degree of LL. D. from Hamilton College in 1861. For some years he was president of the American Academy of Arts and Sciences, and in 1872, president of the American Association for the Advancement of Science. He is honorary or corresponding member of any number of leading foreign scientific societies. His name stands above that of any other American botanist, and ranks with the best of those in Europe."

TITHES IN CANADA.—It is not generally known that tithes are collected by law from the Roman Catholic cultivators of the soil in Quebec. The *Illustrated Journal of Agriculture* says that one twenty-sixth of the grain the farmer threshes, by law goes to the church. The only way by which he can escape the tithing process is by a written declaration, signed and sealed, that he has ceased to regard himself as any longer a member of that church.

THE TANYAH AND ABO.—Wm. Bartram, in his "Travels" published in 1791, notes that on the plantation of "Jonathan Bryan, eight miles up the Savannah River," he observed the "Abo, or Arum esculentum in a low, wet place in the corner of the garden. It is much cultivated in the maritime parts of Georgia and Florida for the sake of its turnip-like roots, which are excellent boiled or

roasted." He then goes on to say, "they have likewise another species of the esculent Arum, called Tannier, which are large and beautiful plants, and much cultured and esteemed for food, particularly by the negroes."

From this it appears that about one hundred years ago the Tanyah was not considered the same with Arum, or Caladium esculentum, as it is now, and that there were two distinct roots of this class known. What is this second plant?

THE VIRGIN MARY'S TREE.—A "Sycamore" tree, probably Ficus Sycamorus, grew new Heliopolis, by Cairo, in Egypt, which was long regarded as a tree under which Joseph and Mary rested in their flight from Palestine to Egypt. It was supposed to be an old tree at that time. It died in 1665, and another planted in its place in 1672. It is said to have got through the recent military troubles without injury.

THE EGLANTINE.—The writer of this was brought up among people who ought to know what they meant when they spoke of the Eglantine. This plant certainly was the Dog Rose, or Rosa canina. American authors insist that the Sweet Briar is the Eglantine, and, when the subject was discussed some years ago, so many "authorities" were brought out that it did seem that perhaps the writer was wrong in his belief. The matter is brought to mind afresh by a chapter on Rosa canina, in *Revue Horticole*, by Mons. Ph. Petitcoq, who remarks "its common name is Eglantine." As Eglantine seems evidently of French origin, a Frenchman should be some authority on a native name.

WHITE GRAPES.—"Propriety" writes: "Why will horticultural papers continue the absurdity of calling green grapes 'white.' It is many years ago since I first called attention to the absurdity, but still the farce goes on."

[It certainly is disheartening. Let our friend try his hand on human nature in another shape, he may have better success in that quarter; for instance, why should we say, "the white man." To our mind few of them are white. Many are rather red than white, especially their noses in some instances.—Ed. G. M.]

LEGEND OF THE ROSE.—According to mythology, the Rose was originally white, and some of the prettiest ideas of ancient poetry are in connection with the origin of the red rose. The blood of Venus, the blood of Adonis, and the blood of Cupid have been severally credited with originating this beautiful flower. Theophrastus seems to be the authority for the Adonis version. "Venus, looking through the woods for Adonis, ran a thorn in her foot, and from her blood entering the ground around a white rose bush, changed the whole to red." This is the story which seems to attract the greater number of modern believers, in so far as there are believers in these ancient stories.

Another story is that Venus, irritated at the mischief Cupid was continually making in the world, gathered a rose branch and whipped with it the mischievous boy. She whipped him till the blood came, and red roses sprang from these drops of blood, but the incorrigible little rascal still pursued his pranks.

The white rose is dedicated to silence. Cupid, forgetting the castigation Venus gave him, was caught by Harpocrates toying with a nymph. With some dread of another whipping, Cupid offered him a white rose in order to engage him to keep the flirtation quiet, and thus to this day Harpocrates is represented holding a white rose which he presses to his lips.

NAPOLEON WEEPING WILLOW.—An erroneous impression prevails that the Napoleon Weeping Willow is something distinct from the Babylonian or common weeping willow. It is simply the common weeping willow raised from the tree which grew over Napoleon's tomb in the island of St. Helena. Mr. John Smith, ex-curator of Kew Gardens, says it came into special public notice in 1825, on account of a twig having been received at Kew taken from a twig growing over Napoleon's grave at St. Helena. To see this twig the crowd was so great, that one Sunday before the hour of opening the gates were burst open. The twig grew into a fine tree forty feet high.

THE OLEANDER.—It appears from Pliny's description, that the Rhododendron of the ancients, so poisonous to animal life, was what we call oleander. It still goes by the name of *Laurier rose*, or rose laurel, on the continent of Europe. They value the plant highly and have red, white and yellow, of many forms and shades, and doubles and singles of all colors.

HISTORY OF THE LOMBARDY POPLAR.—Names are often misleading. People have often endeavored to trace some relationship between the curious variety of poplar and some European species, on account of its name. But the Lombardy Poplar is only so called from its having been introduced to England from Lombardy. It has been traced from Persia, where it abounds, and from the Himalayas, to the banks of the Po, and thence to the

margin of our English streams. About a hundred years ago Lord Rochfort imported from Turin the first cuttings of the Lombardy Poplar, which introduced here the novelty of a pole clothed with foliage.

TRAVELS OF THE INDIAN CORN OR MAIZE.—The *Gardener's Chronicle* notes that "it is not surprising, therefore, that this prolific grain should have accompanied the colonists of various nations over the whole of America from Chili to the chain of lakes. It was introduced into gardens on this side of the Atlantic within fifty years of the first voyage of Columbus. It entered the Mediterranean by way of Spain, and before the death of Queen Elizabeth and her counsellors—two of whom were noted gardeners, it reached the Levant, where it became an important item in the trade of the Venetians. It afterwards passed up the Danube to Hungary, and traveling eastward with the merchandise of caravans, it gradually entered the rice countries, and reached China and Japan."

INDUSTRIAL SCHOOLS.—In a recent address in Philadelphia, the Hon. Richard Vaux said: "The time will come when the people will demand that appropriations shall be made for the establishment and maintenance of mechanical schools, so that from them may be graduated young men whose diplomas will show that they are educated and skilled in the arts, and the peers of any other men, no matter what their profession."

The fact seems to be overlooked that very few lads come to love the trade or pursuit in which they have been trained. We have agricultural schools, and it is a well known fact that a very small percentage of those who go to these schools ever become farmers. Nurserymen know that of the great number of those young boys who are placed by their parents, or who get opportunities to learn the business, it is extremely rare to find one who finally cares for it. The great bulk of the most successful in any employment are those who took to it in comparatively later years, from the love of it and not from early training.

So far as systems of education shall permit of the development early in life of a love of industry and mechanical pursuits in a general way, Mr. Vaux's idea is well enough. Those who love labor will soon find how to put it into useful practice.

FREE RAILROADS AND CANALS.—It may be well worth considering when we suffer whether the remedy is not worse than the disease. There are few people who suffer more from what appears to them unjust railroad discriminations, than farmers and gardeners. But it may be questioned whether this is to be remedied by some methods proposed. New York State has resolved to try the experiment of free canals. Instead of the people who use them paying for their use, about one million dollars will have to be annually raised by taxation to pay interest on bonds and running expenses. This is intended as a blow at "railroad monopolies." This good, however, will result that we shall have a chance to see by experiment how the rule of free roads in the hands of State politicians actually works.

NEW CHICAGO FLORISTS' HOUSES.—Mr. E. Sanders describes in the *Prairie Farmer*, the new houses of Mr. F. F. Canda, all heated with hot water in the best manner, using two pipes or steam boilers and some 7,000 feet of four-inch pipe. The houses, three in number, are built east and west, 150 feet long by about 20 feet wide, and attached with a fine take of roses and carnations, along with a smaller stock of a mixed class of plants.

MILLER & HUNT, OF CHICAGO.—Mr. E. Sanders says in *Prairie Farmer*: "Miller & Hunt, on Halsted street, in Lake View, have acres under glass, including eleven new houses erected this year in Terre Haute, Ind., on purpose to get into a good rose growing soil. Their houses are part north and south, six in number and about 250 feet each. Then a range lot of several more at right angles to these, and some 300 feet in length. The most of the heating is done here by steam, although a portion is hot water, and the great forte is roses."

THE FLORAL CABINET—Published by the Ladies' Floral Cabinet Company, of New York. We noted some time since that Mr. C. L. Allen had accepted the editorship of this magazine, now in its ninth volume, and that this fact promised a new lease of life in a magazine that had already done good service. It has now changed its form to one-half less, with the same amount of reading matter, and has been changed in other particulars, which more than ever adapts it to the floral wants of ladies of culture and refinement. It promises to be a very useful aid in the progress of intelligent gardening.

PENNSYLVANIA STATE HORTICULTURAL ASSOCIATION, 1882.—From E. B. Engle, Secretary, Chambersburg, Penn'a. This is one of the best reports which come to our table, chiefly because the secretary happens to be one who seems to have the rare knack of catching the point of a speaker's

remarks, and giving the substance in a few words. The colored lithograph of a Seckel pear, and the old Seckel pear tree is poor; but the illustration of Pennsylvania fruits in plain work very well done. Of these there is the Cumberland Triumph cherry, a magnificent fruit, quite equal to the Black Tartarian, and the York Stripe and Pyle's red winter apple. It is a good idea for a state society to represent its state fruits, especially when they are of such a superior character that they will last for many years, in all probability, before they become obsolete.

TRANSACTIONS OF MASSACHUSETTS HORTICULTURAL SOCIETY, 1882. Part I. — From Robert Manning, Secretary. We learn from that excellent report that rose culture seems to be growing in popular estimation in Massachusetts. $3,050 was the sum appropriated for premiums for the season. The papers and discussions refer to the taste for ornamental trees, which, the general remarks of the speakers indicated, did not grow near as fast as the ability of modern nurserymen to supply the want. Apple and pear culture seemed to indicate much the same. There are numerous varieties in existence far better than many which are popular. The great want seems not so much the encouragement of new varieties, as better means of making known the great number of good things which we already have. Flower culture, especially hardy flower culture, was freely discussed, and an immense number of good things pointed out as suitable for the latitude of Boston. An interesting paper on the yellows in the peach is by Prof. Penhallow. He found fungi at every stage of the disease, and described the species he found; but the discussion which followed showed that Prof. Penhallow's able paper had not the slightest effect on the minds of those who listened in inducing them to believe that the yellows was caused by fungus. Indeed Dr. Goessmann, who immediately followed, remarked that "the disease may be due to atmospheric influences; on a sultry day, when evaporation cannot be carried on, stagnation may result and cause disease." It would be just as well to show, by experiments, that there is no evaporation on a sultry day, as to rise in a public meeting and say it "may be" so. It is, however, but justice to say that Prof. Penhallow's paper only deals with what he found after the disease appeared. There is no doubt but the fungus, which causes the disease, is at work for a year before there is any evidence afforded by the appearances on the tree, and that this disease can be communicated by digging up a mass of fungus-infested roots, and placing it in the ground about a healthy tree. This evidence, already given in our pages, is worth more as indicating the actual fungus origin of the disease than any microscopical examination can be.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

FERTILIZING MOSS.—Mr. E. A. Caswell writes: "Permit me to thank you for inserting my reply to Mr. Henderson. Although the foot-note seemed to you requisite, it seemed to me quite to warp my meaning. The word "impartial" was in no wise meant to attack Mr. H.'s judgment, it meant merely that the plants should all be under similar conditions throughout their growth. I wrote a letter to Mr. H. so stating, and disclaiming the intention, by the word, of calling him in question. I have a pleasant letter from him saying that he took no umbrage at my article and deemed the phrase "sneer" hardly called for. This matter having been pleasantly settled, Mr. H. and I propose to have a competition under suitable conditions. Perhaps you will find it legitimate news to tell your readers that the Dumesnil moss had a medal (bronze) given by the Massachusetts Horticultural Society, and that a bronze medal was given to it Saturday by the American Institute Fair, and also by them one for plants grown in it. Hoping to find some day as much favor in the eyes of agricultural journals as we have before these other tribunals, I remain yours with thanks."

ADVERTISEMENTS.—Charles E. Parnell writes: "Since the publication of the paper on single dahlias in the December MONTHLY, I have received many inquiries as to where they can be obtained. I did not write the paper in question, and moreover have not as yet cultivated them, so I cannot give the desired information. I have answered all who enclosed stamps for that purpose, but those who sent postal cards remain unanswered, as it is enough for me to reply without having to prepay postage on queries that should be sent to the editor."

[It is singular that so many should take it for granted there is but one "P." in the world.

The paper was written by one of our English correspondents, and we always take it for granted that when a writer fixes an initial and not the full name, the reason is that he does not desire correspondence about the matter. Hundreds of people write solely for the public good, and without their full name purposely, that they may not be charged with using the columns of a public journal in mere advertising interest.

We suppose leading seedsmen have or will have the seeds to offer. These are the ones to write to, but not the editor—as our correspondent suggests—who, as editor, knows nothing of advertisers.—Ed. G. M.]

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

DISCRIMINATIVE PREMIUMS.—Over and over again we have suggested a reform of the manner in which premiums are given at horticultural societies. They lose half their value to the receiver because no one knows why they receive them. The public does not care to be told that Primus had the first premium for cauliflower, or Secundus for beets. It cares a great deal more to know what the premium articles looked like, and we feel certain that modern horticultural societies, which in many cases are now dragging along a miserable existence, will never revive till they do something to bring widely before the public the real merits of the successful exhibits.

The Germantown (Phila.) Horticultural Society was first founded on the old plan; but it got down so low that it became entangled, as it seemed hopelessly, in debt. It could not even pay the premiums it promised, and even these premiums were scarcely thought worthy of being competed for by good horticulturists, whether professional or amateur. At last scarcely a score of persons attended the monthly meetings. A new departure was inaugurated about four or five years ago, the main effort being to make the exhibits as instructive as possible. The result is that the society is now out of debt, increases its premiums, has better exhibits than it ever has had, and its rooms are thronged during the meeting by all the best gardeners of the vicinity, as well as by numerous ladies and gentlemen of the highest social standing. At the last meeting a new feature was introduced by Mr. David Cliffe, Chairman of the Committee on Awards, in the direction indicated at the opening of this paragraph. In announcing the decisions of the committee he explained to the meeting the various points of superiority, in other words the reasons for the awards. It was highly appreciated by the thronged assemblage, who warmly applauded Mr. Cliffe at the conclusion. It is something to have such instructive decisions given verbally, and we are sure that that society which shall be the first to go to the trouble and expense of giving such reports to the public, will gain so much in the estimation of exhibitors, that it will never need to go begging for something to fill the hall.

PENN. STATE HORTICULTURAL SOCIETY.—The annual meeting will be held at Harrisburg, Jan. 17th and 18th, 1883, and there is every indication of an unusually full and interesting meeting. Excursion rates over the Pennsylvania, N. Central, Phila. & Erie, and other roads, have been granted, and orders for the same can be had upon application to the secretary. Tickets can be bought from January 16th to 18th inclusive, good to return until January 20th inclusive. Circulars with fuller announcement will be issued soon by the Secretary, E.B. Engle, Chambersburg, Pa.

OUR PRESENT SYSTEM OF COMPETING FOR PRIZES.—The *London Garden* accurately describes the present system for premiums as the "victory of the least bad," When judges shall be expected to give their reasons for awarding premiums we may know wherein the merit of the victor lies. It is really remarkable that the old lazy system should prevail so long.

HALL OF THE NEW YORK HORTICULTURAL SOCIETY.—This flourishing society has purchased the "Church of the Disciples" near Broadway, which is to be converted into a horticultural hall.

THE

GARDENERS' MONTHLY

AND

HORTICULTURIST.

DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

VOLUME XXV. FEBRUARY, 1883. NUMBER 290.

FLOWER GARDEN AND PLEASURE GROUND.

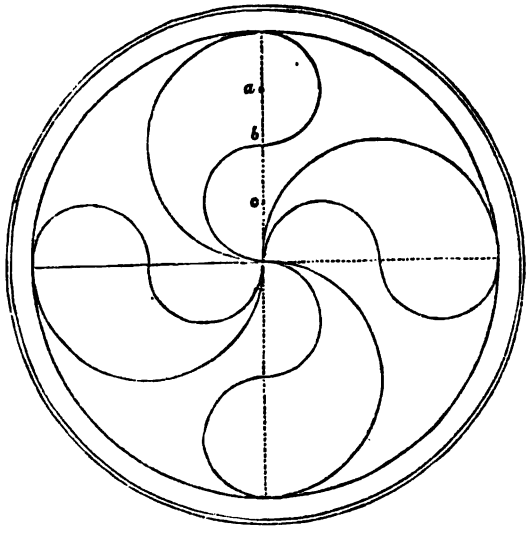
SEASONABLE HINTS.

Just now we note much being said against the use of knife or shears on ornamental trees and shrubs. There are some who would not cut a tree under any circumstances. Everything should be natural. There can be no greater advocate of nature, or perhaps it would be best to say of natural ways in gardening, than the GARDENERS' MONTHLY. What has been termed the topiary art—the trimming of trees and bushes to resemble everything under the sun—was pushed to extremes. But without great violence being done to true taste, some such art may surely be permitted. We all like a neatly trimmed box edging wherever it is proper to have an edging of box at all, and the neatly trimmed live fence or hedge is also agreeable. If, now, we allow some of the trees of which the hedge is composed to grow up and form a neatly-trimmed arch over a gateway, we cannot see wherein good taste is seriously violated. In the Tower Grove Park at St. Louis the music-stand is surrounded by a grove of osage orange, which is sheared so as to allow numerous gothic openings through the walls. One might say if a wall is wanted, why not make it of boards or stone at once? But nothing will equal the luxury of sitting under a leafy bower, while the air is actually cooled by passing through the foliage. To our mind, this foliage room, with its numerous window openings, is one of the many successes of this pretty park. Take, even, some gardens which have been criticised; as, for instance, the Italian garden at Wellesley, where nearly everything is cut to some form or other, while a whole garden served in this way would be almost intolerable, as a contrast to other parts it is peculiarly pleasurable, and it is doubtful whether the many landscape pleasures of these famous grounds would be half as enjoyable without the Italian garden. While the universal cropping and shearing which often takes place at this season gives good excuse to those who write down the entire use of the knife in this way, the better course will probably be to use the knife judiciously. The rule of good taste is expression. If we were to find a tree or shrub growing entirely naturally, and taking on some singular shape, there is no doubt it would be as much an object of interest as profile rocks against mountain sides, or the features of scenery in the great caves. Just how far art may help these appearances good taste must suggest.

In like manner there is rebellion against carpet bedding, and the formal arrangement of flowers in masses, or in beds of formal shape. Of course this is often pushed to the extreme, but when we see hundreds of thousands enjoying them, it is evident there must be an underlying element of natu-

ral feeling somewhere beneath such an edifice of art. It will probably be a long while before this style of gardening is abandoned. There are some figures for flower beds which look out of character. The figures should harmonize with the surroundings. For a circular spot there are few things prettier than the old "Dropmore Pear beds."

In old times this "Dropmore flower garden" was popular for affording masses of four different kinds. The walks between the four pear-shaped beds were of grass or shells, or small cobble-stones. Since carpet-bedding, a close form of mosaic work has become popular, the walks are made with stone-crops, or kinds of house-leeks, or of some kind of neutral colored leaf plant. Besides this a border of some other color is placed round the



whole thing, which gives it a pretty finish. We give with this an illustration of what we mean.

The straight lines are only temporary, to aid the drawing of the figures desired on the ground. To make the larger circle of the pear-shaped outline the compass or string has one end placed at *b*. For the two smaller circles at *a* and *c*.

COMMUNICATIONS.

THE GOVERNMENT GROUNDS, DOMINION OF CANADA.

BY WM. ROBERTSON, SUPERINTENDENT, OTTAWA.

Those grounds, from their natural position, elevated as they are over three hundred feet above the Ottawa River, make a grand impression on all who have visited them. A finer view is seldom seen. Looking from them to the southwest, you have the Chaudrie Falls, Suspension and C. P. Railway bridges, and as far as the eye can reach the river wending its way upwards, dotted with wood-covered islands. On the background, in the distance, runs a chain of mountains covered to the top with various sorts of trees, evergreens, &c. On the opposite side of the river lies the city of Hull with its vast piles of sawed lumber. On the northwest, at the bottom of the slope, is the Rideau Canal, Major's Hill Park, and the lower portion of the city; in the distance, peeping from the woods, is the Governor's residence, with the river flowing downward. This river is the scene of much activity in Summer, from the vast quantities of lumber passing by raft and barge to the different markets.

The grounds contain an area of about thirty acres, without its surrounding slopes. About thirty feet from the top of this slope, which is very steep, runs a walk called "the Lovers'," beautifully shaded by trees. At its center is a fountain of water, with seats where the weary may drink and rest. This walk runs all round the back, which is formed somewhat like a D, the straight portion being enclosed by an ornamental walk and railing, in which is the entrance gates from a street of the city.

The grounds may be considered as two flats; on the upper stands the Parliament building and Library; on the lower two blocks of the Departmental Buildings; facing as it were, and forming three sides of a square, apart at the corners about two hundred feet, in the center of which is about six acres of grass. Down the center runs a walk fifty-five feet wide, with two others running from the upper part to the corners; they are fourteen feet wide.

On the upper part of this square stands a parapet wall, straight in the center, but sweeping around and falling at both sides, to the side building. Back of this again, sixty feet at the nearest point, runs two short walls which catch the eye looking from the front, where the front wall begins to fall at both sides, giving an elevated appearance to the building which stands above. Between those walls at each side is a carriage drive and sidewalk, rising to the upper flat with a piece of lawn on each side, in which are ten flower beds, five on each side.

The upper portion on the top of the slope has a cedar hedge (arbor-vitæ, Ed.), inside of which runs a foot-walk. On this upper portion is the greatest decoration of flower beds, embracing thirty-six in number; with two large borders, re-

quiring thirty-six thousand plants to fill them, which may be called of three sorts—motto, design in flower, and mass. The first is entirely made of low-growing plants, which I will try to describe. One is at the junction of two sweeping-walks, and forms somewhat of a triangle, in the center of which are the words "God Save our Queen," in Alternanthera amœna, carpeted with Sedum, surrounded by a border of Alternanthera aurea. In a sort of fancy scroll work, apart from this, is another of Pachyphytum aurem, filled between with Echeveria Californica. Next to the grass border is another, running in a line with this border, of Leucophytum Brownii, filled in with various plants, as the second border divides it into sections. Another is a circular bed, twelve feet in diameter; in the center is a circle of Alternanthera with four points running to the outer border, and the words "Be true." The center and points are carpeted with Sedums. Between those points is another device bordered with Silver Thyme, carpeted with Oxalis trifolioides; the outer circle is Echeveria secunda. The third has also a circle in the center with the words "Be kind," having eight points. The circle and points are bordered with Golden Feverfew; center carpeted with Sedum; points with Oxalis trifolioides. Between these points are figures bordered by Alternanthera, carpeted with Sedum, with an outer border of Sempervivum. Much attention is given to bring out contrast by the color of the plants used.

My flower designs are made with flowering plants, which grow as near a uniform height as possible, always taking care that the tallest is in the center. One of the simplest that any one can make is one I had this year. The bed is twenty feet diameter, circular, with four points running out five feet long, and the same where they leave the circle. A Pandanus in the center, a circle of Centaurea gymnocarpa eight feet diameter; around this plant was filled rose colored Phlox Drummondii, then a band of Phlox outside the Centaurea, Fire Ball three feet, another of Snow Ball, then a line of Teilanthera; the outer a border of Cerastium tomentosum. Following around the points forming an edging those points were filled with Ageratum John Douglas. This is what may be called a ribbon bed; but I carry out many designs in flowers, having various ways to keep my lines distinct, which is a necessity for proper effect. My method of doing this I will describe at some other time. For massing I use such as Petunias, Zinnias, Portulaca, &c. All those beds are cut in the grass in Gothic style, corresponding with the order of the buildings. I always use some distinctive plant in color from the grass. All beds have a border of some sort.

The grounds require a staff of fourteen active men to keep them in order. They are divided according to their different tasks, and soon become very expert. Some trim the beds, which job is done once a week, never allowed to get out of shape, but as it were training them. Others attend to the mowing of the grass. About fifteen acres of this is done by a horse mower, and a hand one to cut corners and slopes where the horse cannot go. Some, again, clip the edges, and sweep the walks; others the watering. Every one has his portion to attend to, and is expected to do it. These lawns are mowed all the summer—at least once a week; in fast growing times twice, and never allowed to show signs of burning for want of water. They are always as green as a spring day morning, even in the month of July. Some of our horticulturists who have visited them say that they are equal to the best of theirs. My method of treating these lawns I will give you afterwards. The task has been a most difficult one, owing to their high, unsheltered position, largely excavated from the rock, and the nature of the soil found on them, all mixed up with the debris from the buildings at their erection—sandstone cuttings and such like.

My facilities for propagation for my beds have been very limited, having only two greenhouses. One, forty by twenty, contains a specimen of most plants of a tropical nature, that I can find worthy of growing. The other is sixty-seven by eighteen, and contains all greenhouse plants that are to be found in catalogues, on this side of the ocean. This lack of glass, although very inconvenient, has had its good results, as it has driven me to try many plans, and I am now able to keep a large stock of plants in a very small space. In public places no one ever stops to enquire whether one has proper facilities to do the work properly or not, but would put him down as incapable if the work be not done right.

Besides this, I use twenty hot-bed lights for the raising of annuals, which are pricked out as soon as ready, into spaces furnished with bottom heat by manure, so that they can be covered up at night for fear of late frosts. From this I get much hardier plants than from under the glass, and it enables me to do much with this small quantity of hot-beds.

The grounds have been the admiration of every one during past seasons. To use the common ex-

pression of the many who have seen them—some of whom have traveled through Europe and seen much—it is the prettiest spot they ever put foot upon.

THE AMERICAN BANNER ROSE.

BY PETER HENDERSON.

I see in your Editorial Notes, in the December number of the MONTHLY, page 357, you state that the American Banner Rose, "like all other sports of this character, is liable to take self color at times." This I think is a mistake. I have grown it largely for the past three years, and have never yet failed to see a flower come striped. In fact it is not only the flower that differs from the plant from which it is sported—Bon Silene—but the foliage is entirely distinct, and has no resemblance whatever to any other rose, being peculiarly veined and of a leather-like texture, showing its whole character to be unique and distinct—distinct enough almost to be classed as a species. The rose has been grown largely by the Dingee & Conard Co., of West Grove, Pa., and by C. A. Reeser, of Springfield, Ohio, and as far as I can ascertain their experience has been the same as my own; that no plant has ever run back to the original. Nor do I think it ever will, as its character is seemingly as firmly fixed as if it had been a seedling instead of a sport.

EDITORIAL NOTES.

THE PHILADELPHIA PUBLIC SQUARES.—The filthy condition in which the several little parks or squares with which the city of Philadelphia is studded, has long been a surprise, not to say disgust, to intelligent visitors to this city, and has often been commented on in this magazine. Last year there was some improvement, for which we gave credit to the Commissioners of City Property. This year they were wretched as ever. In regard to these squares the public prints have the following account of the proceedings of the Finance Committee of City Councils, considering the appropriations for 1883:

"The appropriations to the Department of Markets and City Property was next taken up. The total amount asked for was $179,283, an increase of $40,321 over the appropriation of this year.

"The items in the bill were approved until that for the improvement of public squares was reached. It amounted to $70,000, subdivided as follows: Franklin, $20,000; Logan, $20,000; Rittenhouse, $20,000; Jefferson, $10,000.

"Mr. Wolverton moved to strike out the whole item, saying that the city's finances were not in a condition to stand such an expenditure.

"Mr. Lex seconded the motion, stating that he hoped that the squares could be improved out of the surplus fund this year.

"Gen. Snowden moved to except 'Franklin Square, $20,000,' from the motion to strike out.

"The motion was agreed to, making the total reduction in the bill of $50,000."

If these squares could only be kept decent, so that those who believe that cleanliness is next to godliness might have some encouragement, they would not look so very bad, even as they are. Still if they are "improved," they may have to be kept cleaner, and it is a gain that even one a year falls into the line of decorum.

NOTES FROM STAUNTON, VIRGINIA.—By an accident for which we are sorry, the following chapter of good hints has been in the "wrong box," for several months, till recently discovered:

"Thanks for the 'Seasonable Hints' that opened the June issue of the GARDENERS' MONTHLY AND HORTICULTURIST. If you will indulge in a few more such, perhaps the barbarisms that we see on every side may be curtailed. That is, provided people will ever learn.

"'Twas only two weeks ago that I passed some public grounds where the officer in charge was busily engaged in trimming (rather butchering) Coniferæ—some of them handsome specimens—from the ground, so as to leave a bare stem of over five feet, and, to add to the beauty of the grounds, was topping—perhaps you would say rounding off—some beautiful English Lindens. At the same time the vineyard, consisting of Catawbas, Concords and Delawares, were being trained on the principle we Southerners adopt for growing the Scuppernong.

"The season here in the Valley of Virginia has been exceptionally cool. At this date, June 5th, the mercury at 50 F. Roses just opening; Coleus, Lantanas, Ageratums, &c., wilting under the cool winds. Have you or any of your correspondents any experience with the Pyrethrum as a destroyer of the cabbage worm? If so, how should it be applied?"

RAPID GROWING STREET TREES.—It is a great mistake to choose the Silver Maple and different Poplars for street trees, merely because they grow fast. In a few years they are objectionable because they are so very large, and have to be removed or hacked down. Such moderate growers as Horse Chestnuts, Norway and Sycamore, or Sugar Maple are much better, even though a trifle

less rapid in growth. Few people complain that they are too large for the streets.

THE SPRING BEAUTY OF CONIFEROUS TREES.—Some one having stated in the *Gardeners' Chronicle* that coniferous trees were monotonous, Mr. D. T. Fish comes to their defence, and says: "Monotony of color indeed! It is all very well to bring this charge against Conifers in the autumn or winter, when their leaves have reached maturity or have begun to enter the sere, if not yellow stage. But not our best deciduous trees can rival the rich interest and variety of Conifers in the springtide. Take for example such a Silver Fir as P. Pinsapo; its catkins glow almost with the brilliance of coral, and its grey shoots are soft and rich with verdure that must be seen, as it is beyond description. Then such Spruces as the Smiths and Douglas are of the richest shades. The cones, too, of these and many other trees, such as Pinus excelsa and others, add a new feature of interest and beauty. These added to the catkins, the showers of golden pollen, the curious growing points of the wood, soft and apparently as succulent as juicy Asparagus at times, also, as in the case notably of P. Sabiniana, contrasted with the brown-grey masses of sere and falling leaves, form a combination of light and shade, interest and beauty, that can scarcely be found among deciduous trees. And the odors given out by Conifers are among the sweetest, and perhaps the most wholesome in nature."

Mr. Fish's point is a very good one. The purple male flowers of Table Mountain Pine, and the red or scarlet of the Lawson Cypress are very attractive, while the reddish brown of the new growth of Alcock's Spruce may truly be characterized as gay. There are few flowering plants more beautiful.

THE SACK OR BAG WORM.—The time is coming when that fearful enemy to the Arborvitæ especially will make its appearance. Though we have kept a continual warning against suffering it to eat on, without molestation, it will do good service by again referring to it. The following good sketch is from the pen of Prof. Rathvon in the *Lancaster Farmer*. Hand-picking is the cheapest remedy:

"The spindle-shape cocoons you sent us some weeks ago—evidently taken from an Arborvitæ tree—are the habitacula of a Lepidopterous insect known under the names of "Sack-worm," 'Basket-carrier,' 'Drop-worm,' 'Sack-trager,' and other names, but in scientific language it is called Thyridoptery xephemœriformis, a name almost 'as long as the moral law.' Perhaps if it knew the space its name occupies in natural history, it would be better mannered than it is. It is notorious as a tree defoliator, especially cone-bearing trees, and most especially, perhaps, the Arborvitæ. It may have a choice, but it is by no means restricted by that choice, and will attack almost any kind of a tree. We have known it to be abundant on linden, maple, elm, apricot, plum, locust, apple, pear, various species of pine, quince, oaks—in short on nearly all kinds except the peach, and we have heard that it has been known in a 'strait' to attack the peach. Many of the follicles now found on trees are the deserted habitacula of the males of last season, but a goodly number are those of the female pupa filled with eggs, and now before the trees have put forth their leaves, is the time to collect and destroy them. If the season is favorable, between the 1st and 15th of May, the young will be hatched from the eggs that have remained in the sacks or baskets of last summer. If they are left undisturbed until the last of May or the beginning of June, the trees will be in full foliage, and for a month or two the foliage will be too dense to see them. Each female deposits one hundred or more eggs, and these eggs possess the possibilities of the same number of caterpillars. These caterpillars are never nakedly seen, for as soon as the young are excluded from the eggs they begin to form their sacks, and these they carry with them wherever they go, only protruding the head and the three thoracic segments of the anterior part of the body. No liquid or powdered remedy can reach them, nor can birds dislodge them from their habitacula. If these insects are permitted to continue on the trees to their injury, the responsibility must rest with those who own the trees they infest; for we know of no insect that is more accessible, especially during late fall, winter and early spring."

NEW OR RARE PLANTS.

A NEW HAWTHORN—CRATÆGUS BRACHYACANTHA.—In 1832, Drummond collected in the Red River region, a hawthorn which has never been properly made out. Mohr and Sargent also collected imperfect specimens, and recently the fruit has been collected by Letterman. These trees looked at a distance like plum trees, with small blue fruit; the ground under them (August 19, 1882), was covered with fallen leaves.

It is a tree twenty to thirty feet high, in very old trees with rough bark, spines usually about six inches long, curved. Leaves about two inches long, lanceolate oblong, short petioled, leathery, serrate, shining, with ribs almost obliterated. Flowers among the smallest of the genus.

CANNA EHEMANNI.—There are few things more beautiful in American decorative gardening than the various forms of cannas, and good service is done by those who endeavor to improve them. Mr. H. A. Dreer sends us the following account of a new one just introduced:

"The most distinct of all Cannas on account of the large oval Musa-Ensete-like soft green leaves which place it foremost among decorative foliage plants. Its most striking feature is the splendid carmine red flowers produced on flower stems of great length that unfold about twelve flowers to each of the smaller branches. These flowers are very large, and are used to advantage in bouquet-making, or producing splendid effects on the lawn."

Canna Ehemanni.

AMPELOPSIS JAPONICA.—Under this name the *Gardener's Chronicle* says is being cultivated in Europe our common Poison vine, Rhus toxicodendron.

THE DOUBLE ESCHSCHOLTZIA.—Many double flowers do not produce many seeds, but it is said the double form of this pretty Californian annual produces some seeds, which reproduce the double form.

WEIGELA CANDIDA.—This pretty white variety noticed before in our pages in connection with the nursery meeting at Rochester, and which will probably supersede the old Hortensis nivea, forms a colored illustration in Ellwanger & Barry's new descriptive catalogue.

GREENHOUSE AND HOUSE GARDENING.

SEASONABLE HINTS.

This is the season when many things will require re-potting. Many have a set time and season to do this; but some things require re-potting at various seasons. The best time is just before they are about to make a new growth. Camelias, azaleas, and many plants, for instance, start at this season. It is not necessary to re-pot so often as some think, especially if bloom, and not very large specimens, is chiefly wanted. If the pot is very full of roots, and the plant growing weak, it may need re-potting.

In potting, see that some provision is made for allowing the water to readily escape, by putting broken crocks over the hole. Use soil rather dry, and ram it firmly about the old ball. Prefer pots only a little larger, to very large shifts, as less liable to accidents. Trim the plants in a little, if unshapely, to encourage the new growth where wanted.

Sometimes the plants get "sick," which is known by unhealthy, yellow leaves. This is usually by over-watering, generating a gas, or, as gardeners term it, a "sourness," destructive to the roots. The remedy is to cut the plant back a little, shake out the soil, and put the plant in a small pot with new soil and place the plant in a house only moderately warm, and which is naturally moist, so that the plant can live for a while without requiring much water. It will generally recover.

Many who have but small houses and wish to have a variety, are troubled with valued plants, becoming too large. To keep them low, as soon as the plant has matured its growth, cut it down as low as may be desired. As soon as it shows signs of breaking forth into a new growth, turn it out of the pot; shake or tear away the old ball of

roots and put it into a small pot as it can be got into; and when it grows again, and fills the pot with roots, re-pot again as before.

COMMUNICATIONS.

LARGE COXCOMB.

BY S. W. WEBB, CHARLESTON, S. C.

During the past summer my attention was drawn to some "Celosias" growing in the garden of an amateur in this city. There were only two that grew to any size. The largest measured 30x18 inches. The plants in height were not over two feet and a half, and were never transplanted. During their entire growth they received no attention save the driving of a stake to support the flower. Seeing a description of the Chelsea coxcomb in the MONTHLY, I thought I would write you about this South Carolina one.

CARNATION—JAMES A. GARFIELD.

BY AUGUST D. MYLIUS, DETROIT, MICHIGAN.

The best colored carnation I have at present is President James A. Garfield, a seedling raised by Messrs. Breitmeyer & Sons, of Detroit. The plant is very robust, and proves to be the best for winter blooming of all colored sorts, on account of its sweet scent and very large flowers, it being double the size of other carnations. In every way this carnation is perfect, and I am sure in a short time it will take the place of the kinds now used for winter blooming. In fact there can not be too much said in praise of this carnation. The color is a rich vermillion. This firm raised another good carnation which they named Mrs. Garfield. The color is like a Chinese pink.

HEATING GREENHOUSES WITH STEAM.

BY E. HOLLEY, HUDSON, N. Y.

Having been very much interested in reading the various articles which have appeared in the GARDENERS' MONTHLY during the last year, and wishing more information on the subject, I would now like to ask those who have had experience the following questions:

How many radiating pipes of one inch or two inch size, are required on each side of a hundred foot greenhouse, and twenty feet wide, to easily keep up a night temperature of 65° when the thermometer goes down to 15° below zero? Are two one-inch pipes as good or better than one two-inch pipe for the purpose of radiating heat? How many horse power boiler is required to heat such a house (100x20 feet)? Can three or four such houses be heated in the same proportion, that is if it requires a five-horse power boiler to heat one house, will it require a twenty horse power to heat four such houses? Is steam heating cheaper than hot water, regardless of the cost of pipes? Does steam heating work as well in an ascending as it does in a descending pipe, or would the condensation of the steam in the pipes cause trouble in keeping up the circulation of steam in the ascending pipe? Can a steam boiler be safely left at ten o'clock at night until seven o'clock in the morning, or is it necessary to watch it more closely than for hot water boilers? What style of boiler would you recommend where economy is an important item. Any one who has had experience in steam heating (for it is experience that we want), that will kindly answer the above questions through the columns of the GARDENERS' MONTHLY, I think will confer a favor on a large number of its readers.

THE MEALY BUG ON COLEUS.

BY WALTER ELDER.

The mealy bug has got among the Coleus family, and done damage the past three years, threatening to drive them out of culture. Propagators, by whose carelessness the bug spreads in this way, will be the first to suffer by the calamity, and it is time to look into it to save their customers from disappointment and themselves from loss. The bug is fond of the heat and moisture of a propagating house, and multiplies fifty times as fast as Coleus plants do. It can easily be destroyed. Make a weak solution of carbolic acid soap and Paris green or sulphur. When the cuttings are prepared for planting, dip them in the solution, all but the lower cut ends. Hold them there for a minute in bunches; then lay them upon their sides and shade them from sunshine and dry air. Let them lie a few hours with the lower cut ends open. They will not lose by evaporation while wet; the end cuts will partially callous, and will not be so apt to rot when planted. After being well rooted, and transplanted singly into small pots, dip them in the solution as before, but not the roots. Cover them wholly for shade, and when partially dry plant them. Once a week after that, syringe them with the solution.

To purchasers, I would say before planting, dip the plants in the solution, spread the fingers over the mouths of the pots, and turn the plants under-

most. Then dip the plants (not the pots); set them in a warm, dark place, or shade them. In two days afterwards set the plants in the beds to grow. To those who do not know the bug and its ways of multiplying, I may say it locates itself at the forks of stems and leaf-stalks, and is very difficult to dislodge. When a white down appears on the plants, it means that there are hundreds of eggs to hatch young bugs. They are almost as minute as are the spores of mildew. Brush off the down with a very small painters' brush, or make a brush of horse hairs to do it. It will then be well to syringe the plants with the solution once a week for awhile. That may not kill the live bugs, but will check their ravages, and may kill all the young breeds from the eggs. Gardeners who have garden frames with glass sashes, may set the plants in them after dipping; then put on sashes and shade the plants one day and night. Keep them there two weeks; dip them again and plant them out; examine every plant carefully. I have not seen the bug upon any of the other ornamental foliage plants.

[Mr. Elder's warning is well-timed, for the mealy bug has undoubtedly shown a growing taste for the Coleus. For hard woody stems the following has recently been recommended by the London *Journal of Horticulture*. It would probably not be so for soft wooded plants, like Coleus, but every good hint in the warfare against insects is a gain: "Common gas tar that was used here, about a fourth of tar to equal quantities of clay and water, one man keeping it well stirred during the time that another man was applying it to the vines, rubbing it well over all the cane, eyes included. We had some Lady Downe's more affected with bug than any others, and were prepared to remove them in spring if they suffered from the treatment we gave them. In their case the tar was used much stronger than the quantity given above, but the dressing had not the slightest ill effect, as the eyes broke as freely as those on the other canes in the same house. We paint all the wires and rafters in the vineries with paraffin oil, as it is no use trying to get rid of mealy bug on vines by cleansing the vines only."—Ed. G. M.]

EDITORIAL NOTES.

LARGE GREENHOUSES.—Mr. Charles Joly, in a paper on the Glasgow Botanical Gardens, notes that the greenhouse at the Crystal Palace, at Sydenham, is 535 metres long; one at the Industrial Palace at Paris, 192; Palm house at Kew, and a house at Laeken, each 120; the new one at Glasgow, 106. A metre is about 3 1-3 feet.

LILIUM HARRISI.—Lilium longiflorum, or rather as has been already noted in our columns, L. eximium Harrisi, is being introduced with great favor among English floriculturists.

ELECTRIC LIGHT IN PLANT GROWING.—Some time ago the newspapers were full of the wonderful accounts from England that plants could be made to grow all night by using the electric light, and this would be a great aid in forcing fruits and flowers in winter. It was noted at the time in these columns, that plants had been found in America to grow almost as freely by night as by day, and that however valuable in England, we could hope for little advantage from it here. It now appears that it has been tried in France, with no difference between the ordinary growth and that with the light.

FRAGRANCE OF THE GARDENIA.—This once popular flower is likely to be superseded by the double Tabernæmontana, which is just as sweet, just as waxy, and in every way as conspicuous, yet produces flowers more freely and more continuously than the Gardenia. The foliage also has some resemblance to that of the Gardenia.

SOIL FOR FUCHSIAS.—*Gardening Illustrated* says: Fuchsias like a rich soil freely drained consisting of turfy loam, old thoroughly decayed manure or leaf-mould in about equal portions, with a good sprinkling of charcoal dust and sand, and, if at hand, a handful of bone-meal may be added at the last shift. Should they be required to bloom for a long time and continuously, they must be well fed. They are often well grown under vines, the moist atmosphere necessary for their proper development and the partial shade of the vine foliage seeming to benefit them materially; bear in mind, however, that where the vines are closely trained and the foliage becomes dense, the shade will be too much for the fuchsias.

AN INDOOR FRAME.—A lady furnished a detailed account to the *Gardeners' Chronicle* of her contrivance for starting seedlings in early spring in place of a hot-bed, the substance of which is as follows: A stout wooden box was made about twenty inches square and about eighteen inches deep. This was supported on four legs, a hole was made in the bottom and boxed round; then about two inches of cocoa-nut refuse was placed over the bottom of the box, and packed round a common tin baking dish; on this were placed two

or three strips of wood to support a sheet of perforated zinc with a hole in it, through which was let in a common two inch draining pipe in a vertical direction, so as to enable water to be poured into the dish. Over the zinc cover was a layer of broken pottery, and over that a quantity of fine sandy soil, filling up the box to within six inches of the top. An ordinary square garden hand-light, with upright sides and pyramidal top, was put over the whole apparatus, and a lamp was placed under the hole in the bottom of the box. The seeds were sown in small pots, which were sunk in the soil to a greater or less depth, according to the amount of heat which they required. The steam from the hot water passed through the holes in the zinc, and kept the soil moist and warm, raising the temperature at the surface to about 70° Fahrenheit. Of course the water in the baking dish required to be renewed to replace the loss occasioned by evaporation, and a little practice soon taught how often this should be done. As the frequency must depend on the depth of the baking dish, &c., each experimenter must ascertain for himself, by occasionally putting a stick down the draining pipe, and noticing the depth of the water below; for if by carelessness he allows the water to entirely evaporate a hole in the tin will be the result. As the young seedlings grew it became necessary to provide more room for them in a longer box, or one two feet wide and four feet long, not heated with a lamp, but with a special tank to be filled with hot water every twenty-four hours, and with a tap for drawing off the water which had cooled, and a bent pipe at the side for filling it, which, being no higher than the top of the tank, prevented danger of over-filling. It was covered with sliding lights. This box, not being so warm as the other, answered well for receiving seedlings already started.

PRIZE ORCHIDS.—The orchids which obtained the chief premium at the New York Horticultural Society in October were grown by Mr. W. H. Clements, gardener to Mrs. M. J. Morgan, and were: Odontoglossum Roezlii, Cypripedium niveum, Cattleyea Trianæ delicata, Oncidium varicosum Rogersii, Cattleyea labiata pescatoria and Cattleyea Exoniensis.

A GOOD ROSE.—Referring to the florists' establishment of Miller & Hunt, of Chicago, Mr. E. Sanders remarks, in the *Prairie Farmer*: "A fine little rose for bedding and cemetery work, pure white and always in flower, dwarf and pretty, called Mille Annie Marie de Montraval (a most unfortunate name, and Frenchy), that we think is well worth extensive trial. Such kinds as Niphetos, Cornelia Cook, Duchess of Edinburgh, and Perle des Jardins (the crack roses of the day) are grown in immense quantities, while the total number catalogued is something like two hundred kinds.

A GOOD LIST OF GREENHOUSE FERNS.—The following is the list of Mr. F. Roenbeck, of Bayonne, N. J., which obtained the first premium at the October exhibition of the New York Horticultural Society: Adiantum Haysii, Adiantum Mundulum, Adiantum Aneitense, Adiantum Roenbeckii, Adiantum Wigancii, Adiantum denticulata, Adiantum Bausii, Adiantum gracillimum, Adiantum stelatum (new seedling), Adiantum decorum cuniforme, Adiantum Farleyense alcicorne. Gleichenia flabellata, Gleichenia dichotoma, Gleichenia dicarpa, Gleichenia speluncæ. Davallia Tyermania, Davallia canariensis, Davallia canariensii, Davallia alpina. Polypodium plumula, Nathrodium contaminans. Hyminodium crinitum, Nephobolus Lingua, Nephobolus corimbiforum, Nephobolus bicolor, Thamnopteris Australasica, Thamnopteris Nidus, Lygodium dichotoma, Platycereum grande, Platycereum Willenka, Platycereum Wollenkii, Platycereum majus. Aspidium aristatâ.

NEW OR RARE PLANTS.

THE DIAMOND TUBEROSE.—Our readers will remember that on the appearance of the "Diamond" tuberose last year, evidence was offered us tending to show that it was the Pearl under a new name. As the introducers withdrew, in order, as it was stated, to "fairly test it another season, before sending it out," it seemed but justice to give them the chance before saying anything more about it. No opportunity has been afforded us to judge of the difference between the two, but we note that the stock has been placed on the French market, while it is denied to our own.

Under these circumstances we feel justified in expressing our belief that the French are going to pay dearly for a "novelty" in the name of the Diamond, which they could get in the shape of Pearl bulbs for perhaps half the price.

ODONTOGLOSSUM VEXILLARIUM.—The increasing taste for orchid culture in America will render the following representation of a very beautiful species particularly acceptable to a great number of our readers, and even those who never saw an orchid house, or an epiphytal orchid growing, will enjoy looking at a picture of that which they would

certainly love to possess. The name Odontoglossum is hard to pronounce, but means simply the tooth-tongued orchid. It is one of the most beautiful of the great family of orchids, and this species is the largest, and perhaps the showiest of this very beautiful genus.

Odontoglossum vexillarium.

It was introduced a few years ago by Mr. Wm. Bull, from Columbia, in South America.

A NEW WATER LILY.—Mr. E. Sturtevant has raised a new variety of lily from Nymphæa Devoniensis, which, though not a species, Dr. Asa Gray thinks may be called N. Sturtevanti, provided a cross (×) is placed before the name in writing it. According to the description the flower is paler than the original. N. Devoniensis was produced from N. dentata, which is a white flowering species, N. Devoniensis being dark red.

CAMELLIAS AND ROSES.—Since the taste for winter roses grew so wonderfully, the Camellia has been undeservedly left far in the background. There are few more beautiful sights than a well-grown and well-formed Camellia. It is the general impression that there will be a reaction in favor of this beautiful flower before long. The English seem to foresee this, and among the announcements of new plants by Mr. Wm. Bull we note "Camellia Don Pedro" has a prominent place. A colored lithograph adorns the December *Florist and Pomologist.*

NEW CHINESE PRIMULA.—The new Primula which Mr. Maries collected for Messrs. Veitch, at Tchang, will probably be useful for hybridizing purposes on account of its distinct habit; no other cultivated Primula that we know of possesses foliage which lies, as it were, flat on the soil. The delicate mauve-tinted flowers with their bifid petals will doubtless become larger, and hence more attractive under cultivation.—*The Garden.*

SCRAPS AND QUERIES.

RAISING FINE SEEDS.—A correspondent from Sarnia, Ontario, writes: "I find a good plan to sow small seeds like Begonia, &c., on a very soft brick, dug out enough to hold say one-quarter of an inch of soil. Place the brick in a pan of water. The brick draws moisture enough to keep the soil in a nice condition. If this is any use, publish it. Have been a subscriber for three years, and am much pleased with your paper."

[This is also a capital way to raise ferns, orchids and other fine seeds. Sown on a shallow brick, set in a pan of water, they will be almost sure to grow, the only care required being to see that the water is always kept in the pan. When done in the usual way, these fine seeds are sure to be washed away by the watering pot, no matter how carefully the watering is tended.—Ed. G. M.]

CHRYSANTHEMUM MAYWOOD.—Mr. James Taplin, Maywood, N. Y., writes: "I have to-day mailed to you flowers of my new single Chrysanthemum Maywood, which received a first-class certificate at a recent meeting of the New York Horticultural Society. I sent with it flowers of the ordinary Marguerite, or Paris Daisy, that the two might be compared."

[These were semi-double, and a great advance in improvement on the original.—Ed. G. M.]

FIR TREE OIL.—Mr. Robertson, of the Government grounds, Ottawa, Canada, writes: "I have also tested the Soluble Fir Tree Oil Insecticide, and think that its merits cannot be too well known. I have used it on the most tender plants, diluted to about half a pint to one gallon of water, and it not only cleanses the plants from insect life, but adds appearance to many foliage plants. I do not wash it off, as I have seen recommended, and as yet have been unable to see any injurious effect from it.

"It must be of great value to those growing house plants, or where greenhouses are attached to a house where smoking cannot be done. I would recommend it to such people. In it they will find a remedy that they have much longed for."

SEEDLING CARNATIONS.—"J. S.," Louisville, Ky., says: "I send you this morning a sample of a Seedling Carnation that I raised two years ago. I have tried it out of doors and in the greenhouse, and find it to bloom better in either situation than any other I know of. It has a very compact habit. The flower spikes get about fourteen inches high. It is a free, robust grower, and is easily cultivated. I have about one hundred strong plants on a bench which are loaded with buds and flowers. There are fully one-half more buds on them than on any Carnations I have seen or raised. What do you think of its shape and color?"

[These appeared to be fine flowers, but being addressed to the publication office in Philadelphia, instead of to the editor in Germantown, they were nearly rotten before they came to hand.—Ed. G. M.]

AIDING THE DRAFT OF FLUES.—Under date of December 18th, a correspondent from Sarnia, Ontario, furnishes the following excellent hint: "About this time many a poor florist will be grumbling if he has smoke flues—how they smoke. Stop it by making a small hole in the chimney, say for seven-inch thimble at the base. Put a few handfulls of shavings in the chimney. Light them. Then start the fire in the furnace, and everything will work like a charm. No smoke and good draft."

Besides this it may be of service to remind the reader of the admirable plan of Mr. Harris, of Philadelphia, as described in our magazine by Mr. Peter Henderson, in which the flues after going the round of the house, takes its upright position right above the furnace. This is practically a perpetual bunch of burning shavings at the outlet of the flue.

FRUIT AND VEGETABLE GARDENING.

SEASONABLE HINTS.

When fruit trees are grown with root or other crops, it is well known that such root crops will not do without manure. In this operation the trees steal a little intended for the root crops. Hence trees so grown are very likely to have a green, nice color, in strong contrast with neglected trees in grass. It must not be forgotten that trees need as much food as any other crop, and that there is no better way to feed them than by applying at this season on the surface; give them something, if only ditch cleanings. Pruning of fruit trees should be completed as soon as possible, and as a general thing the least pruning the better. In apple or pear trees, strong stout sprouts are apt to come out along the main branches of the tree. These are best cut out, as in time they take to themselves the food destined for the branches beyond, and in this way injure those branches. At other times a branch for some time bearing becomes weakened by some cause, in which case it is often a benefit to cut this off back to a vigorous sprout. This is particularly the case when bark gets what the gardeners call hide-bound. In this case the branches are bettered by slitting the bark longitudinally, or by cutting back to a young sprout as aforesaid.

Some have found injury to the trees from slitting hide-bound bark. The writer practiced it for years on apple and pear trees, and always with excellent results. In pruning dwarf pears cut out the weaker branches where pruning is believed to be at all desirable, even to thinning out the spurs, rather than cut back the strongly vital wood which many do.

The grape is very apt, when trained on trellises, to get its bearing wood weakened. In this case it is always wise, in pruning, to watch for a chance to get a strong young branch from near the base as a renewal cane.

Manuring of grapes should be regulated by the nature of the soil. If it be damp—in most cases a bad condition for grape growing—stable manure in great quantities means diseased vines. In dry ground, it has a beneficial effect. Many persons of small places have grapes in damp ground, or can have none. They must take care to keep the roots near the surface; never crop the ground about them to destroy the small fibres, if it can be avoided; and even good may often follow, when the vines seem failing, to carefully follow up the roots, lift near the surface, and encourage, as much as possible, those remaining there. Wood-ashes, bone-dust, and such like fertilizers are best for grape vines in low ground.

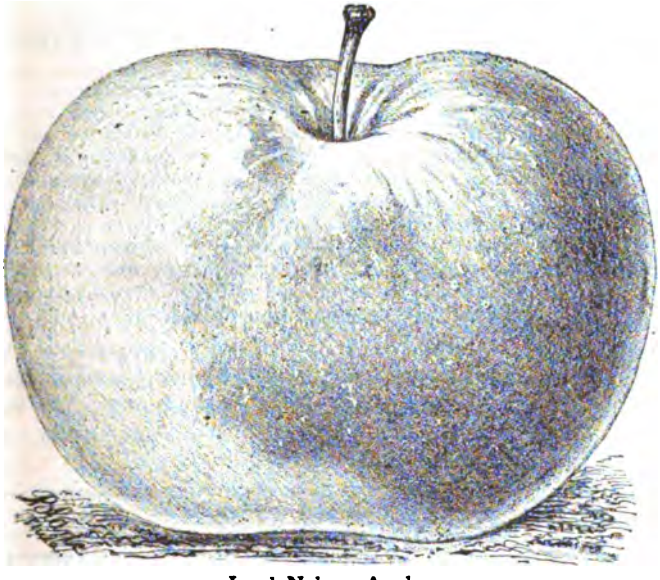
In the vegetable garden the work for February will for the most part consist of preparations for future operations, and particularly for dealing with the manure question. All those kinds that are grown for their leaves or stems, require an abundance of nitrogenous manures; and it is useless to attempt vegetable gardening without it. To this class belong cabbage, lettuce, spinach, &c. The other class which is grown principally for its seeds or pods, as beans, peas, &c., do not require much manure of this character; in fact they are injured by it. It causes too great a growth of stem and leaf, and the earliness—a great aim in vegetable growing—is injuriously affected. Mineral manures, as wood-ashes, bone-dust, etc., are much better for them. For vegetables requiring rich stable manure, it is best that they have it well rotted and decayed. Nothing has yet been found so well fitted for the purpose as old hot-bed dung; though to the smell no trace of "ammonia" remains in it.

COMMUNICATIONS.

THE LORD NELSON APPLE.

BY CHARLES A. GREEN.

While there is no dearth in the varieties of apples now before the public, I have thought there was room for the Lord Nelson, of which the cut given herewith represents an average specimen. Though well known in England, I have never seen it mentioned in any catalogue in this country. It was brought to my notice by my neighbor, whose father, being a man of remarkable fancy for fine fruits and flowers, brought the scions to this country when he adopted it as his home. Though an early winter apple, I first tested it late in January, and it will keep later. It is growing in an orchard with nearly all of our leading varieties, and is noticeable for abundant yield of good sized, fair, merchantable fruit, peculiarly free from worms and other defects. Charles Downing identifies it with the Lord Nelson of the English books. John J. Thomas says if it is always as good as the specimen he has seen it is worthy of cultivation, its beauty adding much to its value.



Lord Nelson Apple.

Fruit large, oblate, yellowish skin, shaded and streaked with red and russet. Stalk long. Cavity medium. Flesh white, crisp, tender, juicy, somewhat aromatic, mild sub-acid. Quality good to very good. It is an apple that will be prized for eating out of hand or for cooking, and sells well in market. The tree is a strong grower, and appears to be very hardy.

IMPROVEMENT OF THE PERSIMMON.

BY H. F. HILLENMEYER, LEXINGTON, KY.

I have sent to-day by mail samples of persimmons for your inspection. They are not ripe, and of course not edible, though they will house-ripen, like pears. A ripe persimmon is not suited for shipment, being so tender, and the object of sending these is simply to call your attention to the marked difference in the three samples. The seeds from which all our bearing trees were raised were gathered from a tree in an adjoining county, in the autumn of 1863 or '64. The trees—some two hundred—were permitted to fruit in nursery row, and then such types as pleased us best were saved. Though seedlings from one tree, there were strongly marked differences in size, quality, color and time of ripening.

The sample with bright blush is an early variety, the fruit being nearly gone, having ripened gradually since the last of August. The other sample, of similar shape, is just beginning to ripen, and the green, egg-shaped ones will not be fit to eat before Christmas. The first when ripe is so tender that it must be eaten from the tree, while the third is fully as firm in texture of flesh as an Early Rivers peach.

The persimmon is, I think, one of the neglected native fruits. The samples indicate how readily changes from a type may be obtained, and I think that the same care that has developed so wonderfully the oriental species, would work a like result in ours.

In our next fruiting of seedlings grown from the very best specimens, we hope an improvement in fruit quite as marked as between that of the first seedlings and the fruit of the original tree.

I will also send you shortly some seedless persimmons, in which I feel a great interest. Should this feature prove constant—a fact that we hope to determine next year—I think it will be a great step gained.

Even though we do not improve this fruit further, it still has merits to recommend it. Our trees, in the twelve or fifteen years that they have been

in fruitage, have never failed to yield full crops. At this writing the earlier varieties bare of leaves, but gorgeous in their wealth of fruit—crimson and gold—are as attractive as the most brilliant trees grown for the beauty of their autumn foliage. I do not especially love this fruit myself, but I do enjoy the gusto with which my little ones visit this department of the orchard months after apples can no longer be found, and even after chipmonks have gathered the last stray nut.

[It is a good idea to try to improve the native persimmon. It is likely the original Japan persimmon was no better than our own, while the superior hardiness of the American would give it great advantage over its Asiatic ally. Those sent by Mr. Hillenmeyer exhibited a wide range of variation.—Ed. G. M.]

FRUIT NOTES FOR 1882.

BY E. B. GOOD, MANCHESTER, YORK COUNTY, PA.

Keiffer's Hybrid.—Fruited here for the last three years, and a more worthless pear I never tasted. I could never yet ripen one fit to eat. For pickling they answer admirably.

Brighton Grape.—This grape has done perfectly well here thus far, ripens early and keeps a long time on the vine, and the fruit is simply delicious. The bunches should be thinned out to about one-half, as it is liable to overbear.

Lady Washington.—This superb grape fruited here for several years, and to my taste is perfection. The vine is a strong, vigorous grower, and seems to be perfectly hardy. Bunches very large, and when ripened in paper bags, the berries are nearly transparent. If this grape holds out on further trial as it did so far, it will be one of the most valuable grapes we have.

Prentiss.—Fruited here for the first time the past season; a vigorous grower and healthy. Bunches of medium size, very compact. Not of best quality in my estimation, although it may prove a valuable market grape.

Jefferson.—Not fully tested, but the vine is a strong grower and perfectly hardy. Fruit of first quality.

Moore's Early.—This grape has disappointed my expectations. Bunch small; many bunches will set only a few berries, and the fox odor is much more prominent than in the Concord or Worden's. This latter is a much better grape in every particular, though about a week later.

Black Eagle.—For an amateur grape I have great faith in this one.

Duchess.—Not fruited here. Vines very vigorous, healthy and hardy.

Pocklington.—A strong, rampant grower, wood and leaf of Concord type.

EDITORIAL NOTES.

BAD SEEDS.—It is an old story that a bad workman is the first to quarrel with his tools. If a tree does not grow or a seed come up, it is not uncommon to remember that the tree had poor roots, and to feel sure that the seedsman must have given roasted or old seeds. Mr. Thomas Christy, in a recent work on the Cinchona, thus gives his experience with different gardeners on the same lot of Cinchona seeds. He says:

"There is much more intelligence required in the germination of seed than many people attach to it. For instance, I took some Cinchona out of a packet that had arrived and handed it to three men. One lot of seed came up as thick as possible to be, hardly a seed failing to germinate. The second man's pan had a fair sprinkling of young plants, but the third man's pan had no signs of any Cinchona plants in it at all. All three men were professional gardeners, and nothing was said to them about the experiment; each did his best."

PHYLLOXERA IN FRANCE.—Reports as to whether the French are finding any positive relief from the phylloxera are contradictory. The following extract from a French report partly explains the contradiction:

"In the department of Herault, which produces between a fifth and a sixth of the entire French vintage, thanks to the energetic efforts of its vine-growers, who have had recourse to American vines for the purpose of replacing the vines which have died from the effect of this insect scourge, this department is fast recovering from its first scare, and is rapidly regaining its old position and former confidence. In the Charentes, the great cognac producing districts of France, unhappily, the same is not the case. There the proprietors appear to have resigned themselves to what they have come to regard as inevitable, and cereals are fast taking the place of the vine. On inquiring the reason for this we were informed that of the two most generally accepted remedies for the destruction of the phylloxera, one, that of the employment of insecticides, such as sulphur of carbon and sulpho-carbonate of potassium, has been found too costly; while, owing to the rocky nature of the soil and the small surface of earth, the land is said, on the other hand, not to be suitable for the planting of American vines."

TEXAN PROSPERITY.—The wonderful growth of some Western towns may be fairly rivalled by others in Texas. In 1873, the writer visited Denison, which was then limited to about a score of

PRENTISS.

White, best quality, early, good grower, very productive, hardy, good keeper. Is a native seedling with no foreign blood. Sells wholesale in New York at 15 to 18 cents per pound. Flesh tender, sweet, melting, juicy, with a pleasant musky aroma. Quality the best.

newly erected buildings. Now we see by a Texas paper it has a population of 7,000, and is the seat of numerous industries. Of gardening it is said that "within five years the annual revenue from fruits, wine and vegetables, shipped from Denison, will reach at least a half million dollars a year; 125,000 packages of peaches, apples and plums have been shipped this year, besides twenty or thirty thousand quarts of blackberries, sweet and Irish potatoes, and other vegetables in large quantities; 20,000 pounds of grapes have been shipped since May 18. Early in the season, the shipments go North; later, they go to Southern and Southwestern Texas. A great many melons are also shipped North from Denison. In short, the fruit interests of Denison are simply immense, and it is just now getting fairly started."

Our correspondent, Mr. T. V. Munson, is credited, in the paper from which we quote, with having much to do with this great gardening prosperity.

AUTUMN-BEARING RASPBERRIES.—The literature of fruit culture has become so thoroughly occupied by the market growers, that we are apt to forget that there are other delicious things in the world besides those which have good carrying properties, and that autumn bearing raspberries are among these good things. To grow them well they must be cut down to the ground in spring, and the suckers kept down. They bear from the end of the young wood. We notice that the English magazines regard the Belle de Fontenay, and the Marvel of Four Seasons as different. This is not American experience.

AMERICAN APPLES IN ENGLAND.—The *Garden* says: "The prospects were never more favorable for shipments from America to England than they are this year. The American apple trade, formerly monopolized by Liverpool, has during the last few years (in consequence of direct steam communication), been gradually diverted to London, which market now competes favorably with that of Liverpool.

THE PRIMO STRAWBERRY.—This variety is receiving praise in various quarters for its behavior the past season.

THE WHITE-FRUITED VERSAILLAISE CURRANT.—Under this name a new variety has appeared in France, raised by M. Bertin, of Versailles. It is said to resemble the original in every respect, except that the fruit is a little less acid than that.

THE WASTE BONES OF A LARGE CITY.—At a recent meeting of the Franklin Institute of Philadelphia, Baugh & Sons presented the Institute with samples of products from animal bones made at the Delaware River Chemical Works. They stated that Philadelphia produced daily from 80,000 to 100,000 pounds of bones, all of which, by the art of the chemist, are converted into useful materials. Bone oils, ammoniacal liquor, bone black, carbonate, sulphate, nitrate and muriate of ammonia, fertilizers and sizing glues are among the products, samples of which were exhibited.

SUBSTITUTE FOR COTTON.—Mr. Thomas Christy, Fellow of the Linnæan Society, kindly sends us an account of some new commercial drugs and plants, which have achieved some note in England—the account printed on some very beautiful paper prepared from the fibre of the "white fir" (Abies), which is probably what is known in this country as the silver fir (Abies pectinata). This wood, he says, can be delivered in England, enough to make a ton of pulp, for $20, while a ton from the famed Esparto grass costs $80. Cotton costs over $100 per ton. Cotton machinery will do to spin fibre from fir as well as from flax and other fibres. These are separable into fine film by a new chemical process. We fancy the great difficulty would be in keeping up a cheap supply of fir fibre. It may be cheaper than cotton now, but it takes many years to grow as much fir wood as we could grow cotton in one year, from the same acreage, and this must tend to increase the price to the continuous demand, while cotton is already at its highest price.

DANDELION RUM.—As is generally known the product of fermented sugar is rum. By mixing sugar with chips, old leather, potatoes, parsnips, currants, rhubarb, cabbage, the rum is flavored, and we get as many varieties of "domestic wines" in that way as one can desire. The dandelion is the latest addition to the list of these flavored rums, and is prepared as follows, according to the London *Journal of Horticulture*:

"To make four gallons, pour four gallons of boiling water over the heads of one gallon of dandelion flowers, let it stand till cold, then strain off; add three pounds of loaf sugar with half of the peel of four lemons and four Seville or sweet oranges; boil half an hour the other half of the peel with the oranges and lemons sliced put in at new-milk heat with a little yeast; let it stand three or four days to ferment; then place it in the cask. In a week add half a pint of brandy and stop up the cask. In six months either bottle or draw from the wood, and if it is desired, add a few more dandelions."

LARGE CELERY.—G. D. Moore, of Arlington, Mass., raised a stalk of celery the past autumn,

which weighed seven pounds. It was thirty-eight inches long and twenty-four inches round.

GOOD PEAS.—In a discussion on peas before the Massachusetts Horticultural Society, Mr. Ware said: "Among peas, the American Wonder, which originated in Canada, is rightly named. The vines are very small indeed—there are more peas than vines; it is a sweet, wrinkled variety, and a great acquisition. A succession of green peas is necessary to a perfect table, and this can be obtained, as with corn, by planting a succession of varieties. For the earliest, Mr. Ware recommended Dan O'Rourke, or any of its class, then American Wonder." Mr. Atkinson remarked that there is very little difference in the ripening of Carter's First Crop and the American Wonder peas; the latter is much superior to the former, and he would plant only the latter. After the first planting he would plant only Champion of England. Hon. Marshall P. Wilder had planted ten or fifteen varieties of peas, and found Dan O'Rourke a little the earliest. Breck's Excelsior is a splendid variety—about as early as the Dan O'Rourke. His selection of peas would be the same as Mr. Ware. John B. Moore could not conceive how any one could eat any other than a wrinkled pea. The American Wonder is all that has been claimed for it, and so nearly as early as the Dan O'Rourke that it is not worth while to plant the latter. McLean's Advancer is good. Yorkshire Hero is more satisfactory than Champion of England; it is of equally good quality, a better cropper and not so tall.

THE FAVORITE TOMATO.—This is a new Western introduction, and dares to place itself in comparison with Paragon, Acme and other popular favorites.

THE CABBAGE BUTTERFLY.—A correspondent of *Gardening Illustrated* says: "Wash the cabbages well with strong soot and water, and on the first dry day dust the ground about the cabbages with quicklime, and pick as many of the caterpillars off as you can find; and during the winter gas-lime the land and leave it in ridges to catch the frost, and very few insects will trouble you again. The odors emitted from gas-lime are so pungent that neither moth, butterfly, nor mole will remain on land that is dressed with it."

ORNAMENTAL VEGETABLES.— *Tricolored Celeriac.*—Sentiment seems to be a necessity of existence. That which we eat and that which we admire, can only center in the same individual with violence to human feelings. Yet there are some who can eat without compunction the horse which has been petted, and Prof. E. D. Cope has recently expressed his disgust that "a foolish prejudice" keeps wretched Arctic explorers from eating one another in order to save a portion of their lives.

However, sentiment goes on, and real lovers of flowers will, we suppose, to the world's end, regret that so much flower garden beauty should be ruthlessly destroyed by a mere white frost.

Little by little, however, we can introduce flowers which after petting and loving for a season, we can turn to and devour, if we follow Prof. Cope's Arctic advice, or the lead of the hippophagi. Cabbages and beets for floral decoration have already been introduced, and now we have a pretty turnip-rooted celery. The Erfurt raiser of it says:

"Amongst the numerous ornamental-foliaged plants, so important for the picturesque character of modern gardens, the above variety has been admired as one of the most beautiful by many customers, who visited my establishment. In general, it resembles the old well-known soup celery, but its vigorous leaves of a dark glossy green are richly and most elegantly streaked with a silver-grey hue in the midst of the leaflets and decorated with a broad creamy-white edging. This arrangement of colors fits that variety admirably for effective groups, the beautiful appearance rendering it a striking contrast to other plants, especially in autumn, when the petioles get a violet-red tint, so that the plant grows a true quadricolor.

"Besides, my Celeriac comes nearly true from seed, giving at least eighty per cent. of variegated plants, and finally it is fit for kitchen-use, particularly for the decoration of dishes and fish-plates."

Improved Cucumbers.—The following extract gives an idea of how these improvements are carefully studied out:

"I received this new frame cucumber from a man who is known as one of the most skillful and successful vegetable growers, and therefore can recommend it confidentially as a very superior improvement. I am told that he was not satisfied with all the introductions of frame cucumbers of the last years, and therefore he busied himself in endeavoring to raise a more profitable variety. He succeeded in a surprising manner by crossing Noa's forcing with Queen of England. It ramifies more than Noa's forcing, and produces twice as much cucumbers, attaining every one a length of two feet and more. The flesh is very firm, extremely delicate, the peel being agreeably green with some clearer stripes. But the greatest value of this new variety is its extraordinary longevity;

it blooms and fructifies from spring till autumn without ceasing, wherefore it was called as above."

In America, where cucumbers are raised by the millions, these little points are not appreciated. Long Island farmers alone grow for the New York market three millions a year.

POISON IN MUSHROOMS.—An article in a late number of the London *Medical Times*, asserts that all mushrooms are more or less poisonous, and that the washings which they usually undergo in cleansing them, and the subsequent cooking, have the effect of removing the poison, but the water in which they are cooked is pronounced "highly poisonous."

It is surprising what an amount of nonsense is started by papers which ought to know better. Mushrooms are rarely washed, but simply peeled, and then cooked. Gardeners when working among mushrooms, often eat them raw—in quantities. No one was ever known to be injured thereby. In stewing mushrooms the water in which they are cooked is used with the vegetables. No one ever died from eating stewed mushrooms.

There are poisonous sorts of mushrooms, but we are writing of the edible kind.

SCRAPS AND QUERIES.

GOOD KEEPING PLUMS.—An Abingdon, Va., correspondent writes, under date of November 25th, 1882: "I send you by mail a small box containing one-half dozen plums. They have been gathered more than a month—picked up on the ground under the tree the 20th of October, and laid away in a paper box. One or two of them had rotted, but I think those I send you are sound. They grew on a tree I grafted two years ago on a stock of a wild plum growing in a clump. I don't think they are fair specimens; have seen the fruit one-third larger. The tree from which I obtained the grafts grows in this country, and as far as I can find is undoubtedly a seedling—an old tree growing on a clump of rocks. They are used by the parties in the neighborhood for preserving and jelly making, and said to be fine for the purpose; good to eat, too, when ripe. I saw the tree once only in fruit, about the middle of October, and there were ripe plums on the ground, and on the tree both ripe and green. The family where they grow say they have picked them up off the ground, under the leaves, at Christmas. I send you some of the leaves also. I call it the Campbell, after the family where it grows. What do you think of it? Is it worthy of propagation? I had intended to send them when first ripe, so as to show you the true flavor, &c., but neglected until now."

[We find it difficult to decide what to say about these plums. It is certainly very late to have plums. The leaves and wood indicated that the plant belonged to the common American red plum, but the fruit was rather like improved European "sloes." —Ed. G. M.]

SEEDLESS PERSIMMON.—H. F. Hillenmeyer, Lexington, Ky., says: "I send by mail to-day sample of seedless persimmon. The tree is some forty years old, and has always borne such fruit—not one in a hundred having seed. The tree is heavily loaded this season, and the samples are hardly as good as last year. We hope to fruit this variety on our own place next year, and if among other trees, bearing and non-bearing, the peculiarity be preserved, I think it will be quite an advance."

[The common persimmon varies in the number of its seeds in different trees. Sometimes we find four or more, sometimes two only, and in some rare cases none. The matter is of some interest to physiologists, who often wonder whether the fleshy envelopes of fruits can mature in the absence of pollinization. As the seedless persimmon could probably get pollen from other trees, it would perhaps indicate that the flowers were pollinized, but that some latent weakness prevents the ovaries from perfecting, though fertilized. As to the practical worth of a first-class persimmon without seeds, there could be no question. It would rank with the seedless grape, as well as the currant of commerce, which is a small grape without seeds. —Ed. G. M.]

TANGERINE ORANGES.—A Palatka (Fla.) correspondent says: "I send you by this express some extra fine Tangerines, raised by Mr. F. C. Cochran, of this place. The tree is three years old, and bore 260 fruits."

[They weighed five ounces each, were dark red and flattish, and in flavor delightful.—Ed. G. M.]

BOARDMAN'S TREE PAINT.—There are a number of washes that will kill insects on the bark of trees, and otherwise guard the bark of trees from insect attack. It is not always convenient for people to have these ready mixed to hand, and it is therefore an advantage to them to have something safe at once to apply, though it may cost more than simple remedies. Boardman's Tree Paint is well spoken of, though it has not come under our direct observation.

SEEDLING PEARS FROM CALIFORNIA.—We re-

ceived in the fall a box of pears from Mr. A. Broeck, of Santa Clara, most of them russetty, some very large, and all of them of delicious quality. It is, however, extremely difficult to distinguish the exact difference between pears grown in a distant part from those with which we are familiar on our own grounds. We selected two looking like Sheldon and Clairgeau, and sent them without explanation to one of the best "pearists" in our country, who pronounced them first-class specimens of the two varieties already named. It so happens that the grower has those two kinds on his own grounds, and is therefore fully qualified to judge of their difference. We can only congratulate California on these first-class accessions, following on the heels of Mr. Fox's great successes.

FORESTRY.

EDITORIAL NOTES.

SEEDS OR PLANTS FOR STARTING FORESTS.—Whether it is best to sow seeds in beds, and to transplant for forests, or scatter the seeds on the ground and leave the rest to nature, seems to be one of the valuable questions to come up in the future of American forestry. Though no doubt there will be cases where either one may be better than the other, as a rule plants will be better than seeds. Governor Furnas, of Nebraska, is of this opinion. He was among the first to make tree culture on the prairies a great success.

WOODS AND FORESTS OF SOUTH AUSTRALIA.—Annual Report of J. Ednie Brown, Conservator of Forests. The expenses during the year, £5,787, and the receipts £5,581, showing that the department has been nearly self-supporting. 189,710 trees were planted, and young saplings in natural growth cared for by clearing brush from around them. At the end of the year, including both classes, 212,560 young trees were living and doing well; 239,336 acres of land reserved for forests, have yet to be planted. The amount of acreage planted is 4,042. The number of trees doing well from the Board's work is 440,000.

An experiment was made to sow seeds broadcast instead of setting out young plants. Pinus pinea, Pinus insignis, Eucalyptus globulus, and E. calophylla were employed. The only result is "a few nice plants of the Eucalyptus and the Pinus pinea," but the failure of the experiment "may have been from unsound seed." It is surprising that such a suggestion should be made, as any one should be able to tell whether the seed was unsound before sowing it. But the "experiment is to be repeated with the best seed only." The kinds of trees used in timber-planting are chiefly from the many species of Eucalyptus or Gum trees. Among European trees, Pinus halapensis, Pinea, maritima, Austriaca and laricio, are used to some extent. Pinus insignis of California seems to be very largely grown and other Californians being tried on a limited scale. Of a thousand Catalpas tested last year, the report speaks highly of its drouth-resisting qualities. Though the dryest season ever known, the loss among them was only 5 per cent. The American ash is also growing in favor. A most remarkable commentary on popular names is that white cedar in this report is Melia Azederach—the China tree of our Southern States.

FORESTRY LAWS.—We have a circular protesting against a duty on foreign lumber from Mr. M. C. Read, of Hudson, Ohio. In it he says:

"In the Dominion of Canada are millions of acres of land which, from the nature of the soil, must be perpetually devoted to forest growth. They constitute the natural sources of a supply of lumber for the productive arable and pasture lands to the south of them, in the United States as well as in Canada.

"The time is at hand when we shall be wholly dependent upon this source of supply, or upon the artificial growth of timber in our own country, if the present rate of destruction of our forests is continued.

"The increased price of lumber, caused by a tariff upon importations, benefits only the lumbermen. It tends to the development of no other industry. It does not increase by a single foot the amount of lumber we are capable of producing, but, on the contrary, diminishes the amount by tempting the lumbermen to now cut trees which, if spared, would rapidly increase in value, while it imposes a needless burden upon every man in the country

who is not directly interested in the profits of lumbering.

"It imposes a burden upon the people now, and promises a greater burden in the future, when they become wholly dependent upon the foreign supply.

"If the tariff upon lumber is continued, the work of our Forestry Associations will be vain and fruitless; for pecuniary considerations and the immediate money results will control those who own forests which can be converted into salable lumber."

We are not disposed to say much about tariffs in the GARDENERS' MONTHLY, because we wish to eschew everything that bears on partisan politics. People can get all they want of this elsewhere.

But we may say without prejudice to this unpartisan attitude, that we mistake the American Forestry Association, if its work is simply the preservation of old forests. At one hundred years old a forest is ready for the axe. The lumber decreases in value every year the tree stands after that. It is far better for the country that where there is no chance to get a two hundred-year-old forest to market, the wood should be girdled or burnt off, and the land put to agricultural uses. Forestry associations should bend their efforts towards planting new forests instead of merely protecting old ones; and if in this view a duty on lumber should encourage forest planting among us, it may be well worth even a Forestry Association considering how far it would be judicious in the nation to go.

It is now generally conceded that it would be quite proper to "protect" forestry planting, but just what that protection should be, we must leave to the politicians.

DUTIES ON MAHOGANY AND ROSEWOOD.—A Canadian correspondent sends the following: "Can anything be less in accord with the spirit of the age, which is supposed to favor the reduction of taxes as much as possible on articles affecting the poorer classes, while collecting duties on more expensive articles of luxury? On examining the lumber tariff I find that exactly the contrary rule obtains, for the same duty is imposed upon spruce and the inferior qualities of pine, costing at the mills from six to eight dollars, as upon the clear and finer qualities, costing five times as much, while mahogany, rosewood and satinwood, costing hundreds of dollars per thousand, are admitted duty free. This is the country for the poor man; for the lumber to provide shelter for his family he must pay from twenty-five to thirty per cent. duty, while the rich man can finish off his mansion or palace in mahogany or rosewood duty free!"

As far as the mere politics involved in "duties on lumber" are concerned, we must leave that to other papers. We will only say that in this part of the world the poorest people buy articles made of mahogany and rosewood—as much, perhaps, in proportion to their incomes as rich people do, and the rich man buys as largely of pine and spruce, in proportion, as the poor man does. We fancy the duty has no reference to the wants of rich or poor, but has reference to the encouragement of the home production of timber. The reason why mahogany and rosewood are duty free, is probably that no amount of "protection" would lead to their culture in the United States.

Perhaps a duty on foreign lumber leads to a more rapid consumption of native trees than is immediately desirable, but if it lead to planting of new forests, it will do no harm in the end.

SPARK ARRESTORS.—The intimate connection which sparks from locomotives have with forest fires renders every attempt at improvement of interest to the forester. We recently noted the praiseworthy efforts of a Boston railroad in this direction. We now have to record that at a recent meeting of the Franklin Institute of Philadelphia, a paper was read, describing Rufus Hill's spark arrestor for locomotives, which has been put upon 213 locomotives built at the Baldwin locomotive shops, and has been found to work well. Mr. Hill is master mechanic of the Camden and Atlantic Railroad, a road always foremost in endeavoring to meet popular demands for railroad comfort and convenience.

HABITS OF THE ASPEN.—Mr. Douglas notes the curious and very interesting fact that in the Rocky Mountains the aspen only seems to make one in forest succession after the forest fire has been over the ground. The following from the *Gardeners' Chronicle* also has a similar bearing on this point:

"The aspen trembles all through Europe. It may have commenced its curious habit in the Caucasian range, where it is still a prominent tree, but historically it has always been dispersed over Turkey and Russia as far as the Frozen Ocean, and there is nowhere such a trembling of aspen leaves as in the woods around Moscow, where innumerable seedlings sprang up after the conflagration of 1813. The aspen is found in the bogs of Denmark at all depths, while the alder, birch and hazel do not occur below the oak level. Like the Scotch fir, therefore, it is one of the primæval trees of Europe. It is also a native of the woods of Invercauld, near Braemar, where it ascends to a height of 1,600 feet. It travels into Sutherlandshire, loves moist situations and woods, overhanging the Highland lochs. The margin of Loch Katrine and the

islet of the 'Lady of the Lake' are its favorite sites."

OSAGE ORANGE FOR SILK WORMS.—Col. M. B. Hillyard, who, perhaps, more than any living man has devotedly given time and money in building up Southern industries, says: "But I warn every one against hoping for any success in a business point of view, in the use of the osage orange. The difficulty in securing sufficient leaves, by reason of thorns; the dangers of the succulent leaf, at the late stages of the silkworm, aside from any mooted points on this food, ought to prevent any one using the osage orange, except to learn on. The food answers for a year as food, while you learn silk culture, and until your mulberry trees can be used; but I think the great authorities will agree that, except as a diversion, silk culture on osage orange will prove a failure."

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

CROSS-BREEDING WHEAT.

BY MR. E. CARMAN, NEW YORK CITY.

Mr. Veitch, replying to my remarks regarding the cross-breeding of wheat, says that "the cause of failure is owing to the fact that wheat is cleistogamous," and that necessarily fertilization takes place while yet the flowers are within the folds of the sheaths. There was no failure in the first place, and in the second if there had been it would not necessarily have been due to the fact of the flowers being cleistogamous. A sharp-pointed stick serves to part the palets and glumes, thus revealing the pistils and stamens. If then the anthers be removed, while yet immature, and pollen be introduced from other varieties of wheat, any seeds that form must be cross-bred.

The peculiarity I noted in the remarks to which Mr. Veitch refers, was that so many of our cross-bred seeds should so closely resemble the mother parent. I have crossed no less than 2,000 flowers of wheat, and we have now growing thirty kinds, which are different from either parent. All the rest have been rejected because they could not be determined from the mother variety.

It is very plain to those who have tried to cross wheats that they cannot cross through natural agencies—wind or insects. But it is just as plain that a cross can be easily effected by carefully spreading apart the sheaths, removing the green anthers and inserting other anthers when ripe (or gathered pollen), when the stigmas are receptive.

EDITORIAL NOTES.

SPIRAL GROWTH.—Vegetation, as is well known, grows in a spiral direction. Speaking of animals, and in relation to the development of different forms, in a recent lecture in the hall of the Academy of Natural Sciences of Philadelphia, Miss Grace Anna Lewis remarked: "There is also a tendency to ascend in a spiral, arising from the conflict of these two forces, so that we find why animals rise in grade from lower to higher, and why they must continue to do so as long as the animal world is in existence. There also appears to be a balance of forces between the different branches, one presenting clusters different but complementary to the others. Thus, on the whole, the animal kingdom appears to arise by systems or pairs of branches, by what is termed a method of bichotomus branching."

EVAPORATION FROM DEAD BRANCHES.—The *New York Tribune* is reported as giving its readers "the novel discovery of Professor Bessey, who has demonstrated that the evaporation from a moist piece of dead wood was exactly like that from a living leaf. Now, when a dead branch is large enough to keep continually moist in the interior, it will in dry air constantly lose water by evaporation from its surface. This water so lost is taken from the tree, and must have been supplied directly or indirectly by the living portions. Moreover, it must be remembered that a living branch is well protected against loss of water through evaporation, by the epidermis which covers all its surface when young, or the impervious corky bark which

is always found on it when older. When a branch dies, these protecting devices soon fall into decay, and the water, so carefully guarded by the living parts of the plant, is wasted by evaporation."

If the *Tribune* had read the GARDENERS' MONTHLY, it might have given that news to its readers long, long ago.

DOUBLE TROPÆOLUM, HERMINE GROSSHOFF.—Mr. Henry A. Dreer sends us specimens of a new double Tropæolum of which we give the following illustration. The old double "Nasturtium" or Tropæolum, was of a light red color; this is bordering on the crimson. Besides its great value as an ornamental plant, it is one of those interesting variations from a normal type which lovers of natural history love to study. As every one knows the

Double Tropæolum Hermine Groshoff.

common "Nasturtium" has a long spur projecting from the calyx. The scarlet or zonale geranium is very nearly a Tropæolum, and has a spur like it, but it is united with the flower stalk, and can only be well detected by cutting the stalk across. In the case of this Tropæolum the spur has disappeared with the doubling of the flower. The same thing occurs in the doubling of Aquilegias or Columbines.

DEFENCE IN BIRDS' NESTS.—"T.," Wilmington, Delaware, says: "Noticing your remarks on the nest of the wood pewee, I would ask if you have seen that of the great green-crested fly-catcher? The former decorates with lichens, the latter invariably with a snake's skin. I have seen hundreds of the nests, and have never seen one without the snake's skin. The lichens serve to conceal the nest of the pewee, as they do that of the humming-bird, which always uses them and conceals its nest effectually, but why does the fly-catcher use the snake-skin? Is it to terrify robber birds? It builds in a hole in a tree, often not far from the ground. The skin is woven in around the margin of the nest, and is made very conspicuous."

AMERICAN HABITS OF EARTH-WORMS.—At a recent meeting of the Academy of Natural Sciences of Philadelphia, Mr. Meehan commented upon a collection of leaves inserted by earth-worms in their burrows in the manner described by Darwin, who, it will be remembered, states that such leaves are drawn in by the worms either by the apex or petiole, as may present the least resistance. The collection had been made by Mr. Edward Potts, from his own grounds, and consisted of willow leaves, although peach leaves were sometimes employed in the same way. These leaves being lanceolate, or as much tapering at the one end as the other, were inserted indifferently at the petiole or at the apex. It was supposed that their use is to line the burrows, and thus protect the worms from the cold and moisture of the earth, although portions of the leaves are evidently softened by the secretions of the worms and used as food. A willow leaf will be drawn entirely into a burrow in the course of three days. The habits of earth worms as illustrated by the specimens exhibited were commented on by Messrs. Heilprin, Potts and Leidy.

XERANTHEMUM ANNUUM SUPERBISSIMUM.—Referring to Acroclinium in our last, it was noted that in a composite or aster-like flower, there were many methods by which the flower became, in popular language, "double." We give here a case where another of the "immortelles" has become double,

Xeranthemum annuum superbissimum.

but in this case by the tubular florets in the center, taking on a broadly ovate form, as in some dahlias. Besides the instructive lesson it affords, it is a

highly ornamental plant, and is pronounced by Haage & Schmidt, the Erfurt seedsmen, as the best of all the Xeranthemums."

HANDSOME BIRDS' NESTS.—A correspondent suggests that the wood pewee covers its nest with lichens to disguise it—to make it look like a dead branch—that its enemies may be deceived, and not that it has any love for beauty.

PINE FROM THE ARCTIC REGION.— Among the interesting souvenirs of the De Long Arctic Expedition, are some pine cones, which do not seem to be of the known American species. They have been placed in the hands of Mr. Josiah Hoopes, author of the Book of Evergreens, for determination.

FORMIC ACID AND HONEY.—Honey, according to A. Vogel, says the *Scientific American*, contains on an average one per cent. of formic acid. Observing that crude honey keeps better than that which has been clarified, E. Mylius has tried the addition of formic acid, and found that it prevents fermentation without impairing the flavor of the honey.

CITY SMOKE.—Smoke will soon be at a premium. From 2,800,000 cubic feet of smoke given out by say 1,000 cords of wood, 12,000 pounds of acetate of lime, 200 gallons of alcohol, and 25 pounds of tar may be obtained.

VARIATION IN COTTON PLANTS.— A writer in the *Dixie Farmer*, says there is as much trouble in keeping a breed of cotton pure, as a breed of corn or melons. There is a constant tendency to vary from the type. He believes it to be caused by the visits of insects.

WET WEATHER AND THE GROWTH OF TREES. —It is said that some scientific society has instituted a series of experiments to find out in the far away past which were the wet and which were the dry seasons, by having examined the thickness of annual growths of wood in old trunks. It is surprising that any intelligent body in these days should not know better than this. Wood is not plastered over the old series, as a painter would put one coat on the coat which had gone before, but is an act of vital power proceeding from the cells of wood of the preceding year or season's growth. The amount of wood deposited depends very much on the food to be had in the vicinity of the little cells which have to make the new mass. If, say, at ten feet from the ground, there be a little branch with leaves having a chance to make food, the annual ring of wood will be thicker just below than at two or three feet lower down. In fact if we cut a trunk across at half a dozen places, and take any one side of the trunk for examination, we shall find the "annual ring" of any one year varying in thickness. One section would tell us it rained that year like a deluge, while another section of the same tree would tell us that particular year was the dryest on record. However, if this is not sufficient, it may be as well to add that Sir Herbert Christison, the great Scotch chemist, has made some curious observations on the effects of a cold wet season in diminishing the normal growth of trees. He found on careful measurement that, comparing 1879 with 1878, eleven deciduous trees—not oaks —made on an average 41 per cent. less growth in last year than in the year before. Of seventeen pine trees, the average deficiency was 20 per cent., so that heat appears to have more to do with the making of wood than moisture has. It is strange that the growth of the oak, which drops its leaves, seems less dependent on heat than that of the pine, which we usually associate with very cold regions.

ABSORPTION OF WATER BY ROOTS.—Prof. Goodall in a recent lecture, says: "Aquatic plants absorb water through the surface of all submerged parts. Plants fixed in the soil absorb water through the superficial tissues of the youngest roots; and chiefly through root-hairs. Leaves of such plants absorb no moisture, even when wet by rain. When a plant is torn roughly from the soil, nearly all these root-hairs (which are delicate, elongated cells, thickly clothing a short portion of the youngest roots just behind the root tip), are left behind, and the power of the plant to absorb water is ended. The idea that the tip or spongiole absorbs water has been exploded by experiments, as also the idea that when these root-hairs, or the portions of the root which bear them, are torn off, water is absorbed by the wounded part. The whole work (except in the case of coniferous trees, which have no root-hairs, and absorb water by the newer parts of the root, but never by the tip) of forcing water into the plant, against a pressure of 3 to 5 atmospheres, is done by these minute and delicate root-hairs.

HELIOTROPISM IN SUN-FLOWERS.— Mr. Thomas Meehan exhibited flowers of Helianthus mollis, and remarked on the popular fallacy of sun-flowers turning with the sun. The original "sunflower" connected with the Ovidian stories of Clytie and Phœbus, was the European Heliotrope, and even that did not turn with the sun in the modern, popular sense. It simply grew where the sun loved to shine, and the plant did not flower till the

sun had reached its summer solstice. The mythological story is founded on the fact that the plant continued to open its flowers as the sun declined, or, as Ovid might say, its affection for its beloved was in proportion as the lover fled from her to his winter quarters. The Helianthus was named sunflower simply because the flowers resembled the sun, and there is no relation between it and the sun-flower of mythology.

Yet there are peculiarities worth noting. Travelers across the American plains, where sun-flowers abound, have often observed a great proportion of flowers facing one direction, but there were always some in others, and these exceptions seemed to prevent any generalizations as to special points of the compass being favored more than others.

He has growing in his garden plants of Helianthus mollis, from seeds gathered by him some years ago from near Odin, in Illinois, and the flowers always seemed to have, to a great extent, a general southern leaning, but until this season he had not thought to make exact figures early enough to be satisfactory. This season he found the first flowers open on the 7th of August. The upper portion of the flower stalk is curved, so that when the flower opens some quarter of an inch of stem is at right angles with the lower portion, and the face of the flower is exactly horizontal. It was subsequently found that the flower remained in this horizontal position till the last disk-floret had expanded, occupying about three days, when the whole head commenced to take an erect position, taking about three days more to fully accomplish. Commencing to open on the 7th of August, by the 11th there were sixty-eight flowers expanded, all facing exactly southeast on opening, but on the evening of this day three were found which had changed round to northeast, with a slight tendency up from the horizon. On the 14th there were seventy-three flowers open, twenty-one of which faced northeast. On examining the matter carefully the inclination to the north was found to be due to a slight spiral or uncoiling growth during the advance from the horizontal rest to the erect position. All do not do this, but uncurve rather than uncoil. While this accounted for the northward advance, often as much as ninety degrees in so many flowers, it still left the reason for the original facing of the flower to the southeast among the many problems of plant life yet to be solved.

He referred to the several reasons offered in explanation of polarity in the leaves of the compass plant, pointing out the unsatisfactory character of all of them.

CROSSED ASPARAGUS.—We see it stated that the GARDENERS' MONTHLY is opposed to the idea that asparagus can be crossed. Nothing is further from the fact. The GARDENERS' MONTHLY was really the first to show, even many years ago, that the asparagus had separate sexes, and that it really could not seed at all unless crossed; that is to say, that one plant must have the pollen from another plant in order to produce seed. The position of the GARDENERS' MONTHLY simply is that there cannot be any special variety, such as some named plants have been sent out. But there is no reason why there may not be an improved race. If, for instance, a female plant which is a strong grower and delicious eating, is fertilized by a poor wiry plant, the progeny may be expected to be inferior. If fertilized by one as good itself, the progeny would be superior. There can be no question about which seed would produce the best results. The plants would not be uniform, but there would be a general superiority. There can be no special variety of asparagus, but there can and there ought to be great care in the selection and isolation of plants intended for seed, if one wishes to keep at the top of the heap with first-class asparagus.

OIL FROM PINE.—An important industry, according to *La Nature*, has sprung up within the last few years in the French department of Landes. It consists in extraction and applications of oils from pine. These oils are of two sorts, the heavy (pinoleum), obtained by distilling the resinous wood at a low temperature, and used for painting and wood-preserving; and the light oil for illumination, got by distilling in special apparatus, and purified with chemical agents. This light oil has the same chemical composition as oil of turpentine ($C_{20}H_{16}$), and distils at the same temperature (150° to 160°), but has the advantage of not resinifying. It contains neither pinic nor sylvic acid. As it does not emit vapors except at a high temperature, its use for lighting purposes is quite safe. Its luminous intensity is greater than that of petroleum; it contains 88 per cent. of carbon, while petroleum has 82 per cent. Two similar burners showed the pine oil to have an advantage of 33 per cent. in luminous intensity; the consumption was also less. In the department of Landes roots and old stumps of pine, formerly unutilized, are now made to render considerable quantities of oil.

FERTILIZATION OF FLOWERS BY INSECT AGENCY.—Nehemiah Grew, in 1682, first suggested fertilization as the use of pollen by flowers. Cam-

erarius in 1694, and Vaillant in 1717, completed Grew's observations, but the doctrine was not universally admitted till 1729, when Linnæus published his excellent treatise "*De Nuptiis et Sexu Plantarum et Sponsalia Plantarum.* Kolreuter, 1761, was the first to suggest cross-fertilization, through the agency of wind or of insects. Sprengel, in 1793, submitted that the fertilization of a hermaphrodite flower by its own pollen was the exception. Andrew Knight, 1799, advocated that a plant would not continue fertile by its own pollen through many generations. Robert Brown confirmed many of these views by observations on Asclepiadaceæ and Orchidaceæ. In 1862, Darwin issued his work on the "*Fertilization of Orchids,*" and the evidence he offered has been confirmed by the observations of Hildebrand, Axell, Delpino, Muller, Lubbock, Slade, &c. Since then Haekel and others have believed that the views of the others claim more for the relations between color and insects, than the facts warrant, but the subsequent observations of M. Musset seem to indicate that Hackel's views are unsound.--*Abridged from Revue de l'Horticulture Belge.*

HONEY DEW.—We give place to the following from a correspondent of the London *Garden*, in order to call attention to a question we regard as by no means settled:

"Bee-keepers will rejoice greatly at what they regard as honey-dew, the deposit of which is very heavy this year, as aphis are more than usually prevalent, the undersides of the leaves of limes, sycamores, cherries, and most other trees, being quite covered with them, and, as a natural consequence, the foliage below is heavily coated with their excreta, which they exude in such quantity as to form a glutinous paste, and varnish the leaves quite over. Many look on this so-called honey-dew as a sort of distilled sweetness brought about by atmospheric influence, and never dream of aphis, or think it is the discharge from any insect, else they would not be found, as I have seen them, licking the nectar off, and appearing to enjoy it, till they knew from what source it came, when they soon showed disgust, and a violent fit of expectorating seized them. Hop-growers, and those connected with gardening, know only too well what honey-dew means, and when they see it are well aware that the enemy is at work sucking the vital energies out of the plants, and crippling their growth. What is wanted now is a good downpour of rain to wash the foliage, and cleanse it of both parasites and honey-dew; for though the latter may be good for the bees, and go far towards assisting them to fill their hives with honey, it stops the pores of the leaves, and prevents free respiration, and thus interferes with their health."

Now many of us have seen honeyed liquid excreted from aphides, and are therefore quite ready to agree with the notion of the animal origin of honey-dew as generally accepted.

But the writer is quite sure he has seen numbers of cases where trees have swarmed with aphides without any honeyed surface to the leaves below them, and on the other hand some few cases, especially on the linden, where no trace of any aphides existed. Only last season he saw the whole brick pavement beneath the shade of two American plane trees in front of the Wills Hospital in Philadelphia, covered with stains from drops of liquid which had fallen from the trees. Myriads of flies were feasting on the sweetness wasted there. So far as the eye could tell at that distance from the ground, no aphides were visible. By the aid of a sun umbrella handle, some of the lower leaves were gathered, but there were neither aphides beneath or any appearance of varnish on the upper surface of these shaded leaves. Across the street were other plane trees, the branches almost reaching those on the other side, but no sweet liquid was under these as in the other case. It is inconceivable that trees so near together should swarm with aphides in one case, and have none in the other. These street trees were left with regret that they were not growing nearer where some close attention might be given towards unraveling the mystery. It seems, however, inconceivable that even though aphides should have been in extraordinary numbers on the tops of these trees, they should be able to excrete enough honey, not only to cover the myriads of leaves with a gloss below them, but have still some to spare to splash the brick sidewalk as with a hose. Though we have to give some sort of an assent to the aphid origin of honey-dew, we cannot help feeling there is something back of it all not yet explained.—Ed. G. M.

THE LACQUER TREE OF JAPAN.—The precise tree which produces the gum used to make the peculiar lacquer work of Japan, is now ascertained to be from the Stagmaria verniciflua, a tree genus closely allied to the Rhus or poison vine family. There are vast plantations of the tree in Japan. Each tree is tapped, and during four months juice enough to fill a three-ounce bottle exudes. One thousand trees yield about 12,000 gallons. It is said that the exact manner of its preparation has not yet been discovered by Europeans.

MIGRATIONS OF BIRDS.—An Illinois friend says: "I take great interest in everything touching the habits of small birds. I have no doubt the food question has much to do with their migrations. The robins left us very early last fall, owing to the fruit and late berry crop being a failure."

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

NOTICE OF THE LATE JAMES HAGGERTY, OF POUGHKEEPSIE.

BY V. B.

Sunday afternoon, December 17th, 1882, James Haggerty, the celebrated rose grower and florist of Poughkeepsie, New York, departed this life. Fifteen years ago he began to complain, and during that whole time he did not enjoy many well days. He was mostly always troubled with dumb ague, supposed to be malaria, but this last year he suffered severely from a bronchial disease. A trip across the ocean helped him somewhat, but after he came home it was the same thing over again. A visit to the famous Catskills last summer, and the pure air of the Adirondacks, failed to restore his health, and death pursued his victim until he relieved him on the above mentioned day from all earthly troubles.

The funeral took place at eleven o'clock on Wednesday morning next. It was largely attended. Florists and friends from all parts came to pay their last tributes to the deceased. An eloquent funeral sermon was delivered by the Rev. Dr. Hear. A black pall covered the casket. Large silver handles hung from the sides. A plate with name and age (51 years), together with some beautifully arranged designs in choicest flowers, covered the top. While waiting for the services to take place we took a run through the establishment which the deceased had erected with such ingenuity, conducted with such prudence, and diligently attended to at all times. A side hill with a number of terraces, one above the other, about 10 feet wide and 200 feet long, is planted with all leading varieties of the best roses, most successfully grown and literally covered with buds. Nothing less than an acre of ground is covered with one glass roof, and by the pillars supporting the roof.

Marèchal Niel and other best running roses are trailing from pillar to pillar, and large numbers of this queen of flowers are cut daily. Bougainvillea, with their charming blooms, Bignonia venusta, with large bunches of golden trumpets, change off with the running roses, and are loaded with flowers. The sides are planted with bouvardias and smilax in beautiful festoons. Four large houses, over 100 feet long each, are planted with Gen. Jacqueminot roses and look very promising. One house with Pearl des Jardins roses, healthy and productive. Two houses with carnations, full of flowers, and one with violets, &c.

These are the principal buildings. It looks as if it would cost a fortune to run this concern; but it has so far paid expenses, and by proper engineering thousands of roses and other flowers have been cut and sold daily and resulted in large profits. By his works, as a self-made man, the deceased created for himself a monument which will be remembered as long as Poughkeepsie's history.

Trusting that the widow, three boys and two girls, prove themselves worthy of this famous property, which stands superior to anything of the kind in the State, if not indeed in the United States, we close these few well merited remarks regarding a dear friend whom we esteemed very highly.

"Requiescat in pace."

UNDER THE HAWTHORNS—No. II.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

It is doubtful if any writer of prose or poetry ever had the graphic power to vivify rural scenery with a reality so true to nature as had the gifted Burns, and his happiest efforts are often manifested when delineating the wild and picturesque scenes so peculiar to the romantic features of Caledonia. His ardent admiration for trees and flowers is often expressed with a fervor akin to adoration; and the "milk-white hawthorn bush" seems especially to have been one of his arboreal favorites. And with a descriptive eloquence unsurpassed, how exquisitely in poetic metaphor he pictures an old hawthorn, as it appeared to his vivid imagination in the gray dawn of the early morning, and charmingly invests it with an interest bordering on veneration. As an instance of his felicity of expression, I quote his sentimental allusion to the hawthorn, in the idiom of Bonnie Scotland—

"The hawthorn I will pu', wi' its locks o' siller gray,
When like an aged man it stands at break o' day."

His comparison of an ancient thorn, drooping like an old man with the weight of years, is an apt one. And whoever has looked upon one, after the manner of the poet, will readily recognize in the imagery the bending form of a gray-haired sire, and possibly the ideal of "John Anderson, my Jo, John," whose "locks are like the snaw."

It occurred to the writer when examining some very old hawthorns while in England, in 1881, how much several of them bore a resemblance to Burns' figurative tree.

It was on a blithe May morning, "when nature painted all things gay," I quietly meandered along a well-worn foot-path, by the side of hedgerows flecked with pretty flowers, and which in irregular lines divided the green meadows, to a spot where I had, when a little urchin attending school, spent many a happy hour. The same old hawthorns I had in boyish eagerness often climbed up to gather the red ripe haws from, were still growing there, and to all appearance as vigorous as they were more than fifty years ago. The destructive fingers of time seemed to have touched them gently, and during the long interval which has elapsed since I last saw them, their familiar features had scarcely changed. And yet, while remaining the same old trees I knew in days gone by, there was undoubtedly an increase in the circumference of their deep furrowed trunks, the largest of which measured more than eight feet in girt. On this occasion the heads of these venerable old thorns were each beautifully covered with its annual crown of white blossoms, so fragrant and fair. And as I viewed their well-remembered forms, the floodgates of memory seemed to open and pour out the pent-up recollections of the many strange mutations of the past. To secure a souvenir seemed as natural as the suggestive language of Burns was to prompt my desire "to pu' its locks of siller gray," which I devotedly did, to keep in remembrance.

The verdant fields were prettily bespangled with a variety of spring flowers, from which I brushed the morning's dew, as I leisurely left the old haunts of my youthful days. Continuing my pleasant peregrinations, I soon reached Dunstall Park, to view the handsome groups of the various species of hawthorn for which it is famous.

In this paper I shall omit mentioning the usual variety of interesting large-sized old forest trees, and splendid collections of ornamental low trees and shrubs, or beautiful landscape effects usually found in such like places, and confine my remarks to the very comely kinds of Cratægus oxyacantha, or poet's hawthorn, which pleased me most of all. And methought, as I looked around, how gratified must be the owner of such exquisite scenes, "where every prospect pleases."

Near by where I stood were several thrifty handsome common English hawthorns, which have been the subject of many a sentimental theme by both ancient and modern writers, with whom it always seems to have been a favorite. A little distance off grew some excellent specimens of C. o. alba plena, or double white thorns, and pure and pretty indeed are its superb companions, C. o. rubra plena, or double scarlet, with its single sister, the well-known C. o. coccinea, or common scarlet thorn, which is an old and much admired little tree; while another member of this interesting family is C. o. rosea, whose rosy blush is not so high colored as the two preceding kinds, and of which the planter had made liberal use in the extensive park around. Another red variety of striking appearance, known as C. o. rubra splendens—well named, and of vigorous growth—made pretty clusters here and there, while near by the margin of an ornamental lake, standing singly, was a bush of the very distinct C. o. Douglasii. Its peculiar though pleasing habit will always secure it a place where only a few kinds are grown. Its handsome foliage and great profusion of flowers and fruit enhance its value.

Among these most effective park or lawn ornaments, I noticed C. o. filicifolia, or fern-leaved thorn, a very curious kind; and C. o. variegata, which specially commends itself in either of its three interesting phases of foliage, flowers and fruit. C. o. rotundifolia, a round-leaved kind, formed very pretty objects, as did the more robust C. o. grandiflora, with flowers grand enough for either bridal wreaths or May coronal. C. o. tanacetifolia, the tansy-leaved kind, was one of the many remarkable varieties around me. And forming agreeable contrasts with their interesting compeers, was a fine specimen of C. o. platyphylla, with its handsome broad leaves, and C. o. macrocarpa, remarkable for its large haws and excellent habit.

There were several other beautiful kinds interspersed about and worthy of mention, but to avoid being tedious to the patient reader, will refer to but two others, C. o. stricta, which assumes a close, upright form of growth, and its contrasting companion, C. o. pendula, of drooping or pendulous habit. There were many fine examples of American species, but having previously referred to and described them in the November MONTHLY of

1881, will conclude my remarks with the type I began with.

That the neat and graceful hawthorn should elicit admiration from all intelligent beholders is not surprising, when we consider how much its picturesque form has contributed to make replete the charm of many a fine landscape. And that scenes of social enjoyment and domestic happiness should often occur about them, is most natural. Being such a companionable little tree, frequently found about our homes, we are apt to regard it with kindly feelings wherever seen, as a reminder of some cherished spot. And when found, as we often come upon it in the seclusion of some forest recess or deep sequestered glen, where its extreme loneliness claims attention, we feel as though we had discovered an old familiar friend. And while poetic lays, romantic legends, pleasing narrative and authentic history have the power to charm, will the legend of the Glastonbury thorn ever fail to interest the reader.

In quoting the following account from Loudon's *Arboretum et Fruticetum*, of 1854, I will briefly premise it with the statement that I have been a frequent witness to the peculiarity of the remarkable subject at issue, having seen it bearing blossoms and fruit at the same time in December, January, February, March, April and May.* It is known as C. o. præcox, the early flowering or Glastonbury thorn, and which, according to the Romish legend, once formed the staff of Joseph of Arimathea, and still exists within the precincts of the ancient Abbey of Glastonbury:

"It is said that Joseph of Arimathea, after the burial of Christ, came to England, attended by twelve companions, to found the first Christian church in this island, and guided by Divine impulse he proceeded to Glastonbury for that purpose. It was Christmas day when he arrived at the spot where he had been commanded to build a church to the honor of the Virgin Mary, and finding that the natives did not appear inclined to believe in his mission, he prayed to God to perform a miracle, to convince them. His prayer was immediately answered, and, striking his staff into the ground, it immediately shot forth into leaves and blossoms. And still blossoms annually on Christmas day."

While dwelling on this romantic subject, I cannot refrain from giving the historical account of the C. o. regina, Queen Mary's thorn. "The parent tree is in a garden near Edinburg, which once belonged to the Regent Murray. It is very old, and its branches have somewhat of a drooping character. The tree is thirty-three feet high; the trunk divides into two limbs at fifteen inches from the ground, one of which is one foot four inches in diameter, and the other one foot. The tree is healthy and vigorous, though if it be true Queen Mary sat under its shade, it must be nearly three hundred years old."

Both Greeks and Romans honored the hawthorn, having dedicated it to "Flora," whose festival began on May.day. And in many parts of rural England "Merry May-day" is still annually celebrated with innocent amusements, such as dancing round the Maypole, decked with garlands of hawthorn blossoms. And I pleasantly remember having seen a pretty little maiden, the village beauty, crowned with May or hawthorn blossoms, while her lovely young maids of honor sang the happy refrain—

"With pleasures abounding,
The May-pole surrounding,
We crown her the Queen of May-day; &c."

I would like to continue the subject, but as this is my second attempt to interest the gentle reader in behalf of the hawthorn, I must reluctantly leave much unsaid. I would fain add to the theme; but if my desultory remarks may only persuade the good tree-loving people to plant them about their homes, I shall have accomplished my purpose.

From a Germantown nursery catalogue before me, I see an excellent selection may be be made of hawthorns, suitable for beautifying the home surroundings.

*All of the many hawthorns raised from this remarkable tree retain the peculiar habit of blossoming and fruiting at an untimely season, often to the amazement of the credulous rustics, who regard them with superstitious awe.

EDITORIAL NOTES.

GARDENING AND BUSINESS.—We have occasionally heard malicious remarks when some amateur horticulturist failed in business, that "gardening would ruin any man." It is often forgotten that hundreds will spend on one evening party, or some other luxury, what few amateur gardeners spend in a year. When Mr. Mechi, the celebrated agricultural experimenter failed, the ill-natured wrote of the "natural result of so much experimenting," that it "took a farm in the city to keep his farm in the country," and so forth. His daughter has at length been provoked to a reply in the London *Times*. A Mr. Pell had been rehashing the old dish of scandal, and the lady replies:

"Alluding to the circumstances of my father's death and connecting them with his farming operations, Mr. Pell says, 'the result was not a success.' I beg to state distinctly that my father's ruin was attributable solely and simply to the failure of the Unity Bank, in which, as a shareholder, he lost more than every shilling he possessed. To his successful farming, among other causes, he owed the delay of a catastrophe which had for some time been inevitable. It must remain a question of taste whether Mr. Pell has done wisely in affixing a stigma of 'agricultural loafers' to the many high-minded and honorable men who from all ranks of society have attended the Tiptree gatherings and witnessed the experiments conducted at them. In conclusion, I may add that during the last suffering days of my father's life his thoughts were not so much with himself or his troubles, not so much with family or friends, as with the cause he had long served faithfully and loved so well."

GIANT HORSE TAILS.—When some geologists tell us some sorts of coal may have been formed in times when there was little wind by the falling on the ground of the spores (the analogue of pollen in flowering plants) of cryptogamic plants, we naturally think of our small ferns, horse-tail and similar plants, and wonder as to how such things should be. But the plants were large, and probably the spores sized accordingly. The *Gardeners' Chronicle* aptly remarks:

"Representatives of the marsh vegetation of the ancient coal period would appear still to exist in South America; at least specimens of Equisetum giganteum from Brazil, which is said to have aërial stems of thirty feet, were exhibited by Mr. W. T. Thiselton Dyer, at the Linnean meeting on June 15. A forest of these would certainly carry the mind back to the time when our now coal beds were luxuriantly flourishing in the marshes of the period."

SUB-TROPICAL PLANTS for Industrial Culture or Naturalization—by Baron Ferdinand Von Mueller, has been translated into the German language. It shows alike the interest of the German people in all that relates to industrial improvement, as well as their appreciation of the work of the distinguished Australian botanist.

THE LONDON JOURNAL OF BOTANY—announces that unless better supported it will step out at the end of another year. In contrast with this is the support given to the two American magazines, the *Botanical Gazette* and the *Bulletin of the Torrey Botanical Club*, which though a long way from being gold mines, add to the number of their readers from year to year. With botanical taste growing continually, it is amazing to hear of poor support to botanical magazines. But the fact is that there is so much new in the "New Botany," that readers expect more than a mere chapter or two, in the old style. The advanced botanist in these days, can scarcely go to the fields or woods for an afternoon jaunt, or take up a dried specimen without seeing something new and worth telling, and this is what the modern subscriber expects to read about.

VARIED TASTES IN FOOD.—A reporter of the Philadelphia *Press* called on Mr. Murrey, the chief cook of the Continental Hotel of this city, and gives us the following sketch of taste in cookery:

"Mr. Murrey is an enthusiast in this matter. He has read the Bible from Genesis to Revelation, and carefully conned every word written therein about food; Shakspeare is his constant companion, and he has collated over three hundred extracts from his writings referring to different dishes, principally salads; agricultural reports, which are too often to others a waste of paper, he scrutinizes with anxious eye to discover whether the tomato has been successfully grafted on the turnip, or if the carrot could not in some way be combined with the succulent cucumber; farmers' journals, giving the latest discoveries in the cultivation of fruits and vegetables, are to him precious presents, and, in a word, any book bearing upon food is of more value in his eyes than if it were on finance. And so, when the *Press* reporter approached Mr. Murrey with a request to be allowed to look at his collection, that gentleman, with evident pleasure, willingly agreed to submit it to inspection. And, in truth, it is a remarkable collection. He has, in one series of volumes, over ten thousand bills of fare, and in his library over five hundred books on cookery, and on matters appertaining to that subject. 'You are quite an enthusiast in this matter,' remarked the reporter.

"'I am,' was the ready response. 'I have been fifteen years making this collection, and if I live eighteen more it will be the finest in the world. May I ask you if you are interested in the subject.'

The reporter stated that he was—practically. That settled it. Instantly Mr. Murrey opened his book cases, emptied one shelf after another, piled up English, French and German works on cookery and pastry making, and so forth, and then to cap the climax he ordered up the reserves in the shape of the ten thousand bills of fare above referred to. 'There,' said he, with honest pride, 'there is a collection of which I am proud—where is its equal?'

"The writer gave the conundrum up and then went to examining the bills of fare.

"There were menus from Philadelphia, New York, Boston and Chicago; from Paris, from Rome and from Berlin; from St. Petersburg, from Vienna and from Copenhagen; bills of fare printed on white satin; on plain commercial note; on delicate tints, with letters of gold. There were bills of fare where royalty had sat at the table, where statesmen had dined, where heroes had wined; there were bills of fare which recalled the days when Daniel Webster was entertained at the great dinner in the Revere House, Boston, on January 18, 1856; when John Welsh departed to England as the American minister; when the Grand Duke Alexis,

of Russia, was entertained in New York; when the foreign commissioners to the great Centennial had their farewell banquet in St. George's Hall, with President Grant in the chair; bills of banquets, public and private; of great hotel dinners in the Old World and the new; of restaurants, American and continental; of dishes ranging all the way from plain 'pork and beans' to 'sante de daisans au fumet de Gibier.' Some of these bills of fare are well worthy of the closest attention, whether regarded from a literary or an epicurean standpoint; and, as a curiosity, the following bill of fare at the banquet to His Imperial Majesty the Sultan of Turkey, served at the Guildhall, London, during his visit, is worthy of some study:

"Potage poutoise a l'Albion; potage a la Victoria.

"Ris de veau a la Lucullus; filets de poulets a l'ecarlate; cotelettes aux haricots verts; croustades a la reine.

"Cailles a la Macedoine; crevettes en caisses, aspics de foies gras de Strasbourg; salade a la Russe; filets de soles a la Venitienne; buisson de truffes de Perigord; chartreuse a la Pariseinne; homard a la Venitienne.

"Saumon a la royale; galantine de volaille aux truffes; pate a la Francaise; jambon; pulets rotis; lanuge de bœuf; carre d'agneaux aux concombres; filet de bœuf a la Choisy.

"Celestine de fraises; peches a la Belle Vue; gelee au vin de Madere; gateau a la Princesse; ananas aux croutons; compote d'abricots.

"'I find' said Mr. Murrey, as the writer hastily closed the last of his volumes of his collection of bills of fare, 'I find that there is even great difference in the tastes of Americans who come from various sections of this country. Now a Philadelphian will call for terrapin, calve's head a la secret, fillet de boeuf, etc.; the Bostonians, although it sounds so like satire to say so, do actually want pork and beans, when away from home; if not that, then rare roast beef seems to be their favorite diet; the Western men, too, are great beef-eaters, and are fond of fowl and game—solid food generally; Southern men are, as a rule, vegetarians. They are great salad eaters, and they can appreciate a salad when it is well made. Lamb is a familiar dish with them, and they can ask for it in a score of different ways. By-the-by, how many kinds of salads do you think there are?'

"The reporter guessed a dozen.

"'There are hundreds,' continued Mr. Murrey, enthusiastically. 'Yes, hundreds. Why people know scarcely anything of this subject. Do you know that over one hundred dishes in different styles can be served of Indian corn? Why this subject is inexhaustible.'

"The reporter admitted the latter proposition.

"Mr. Murrey continued: 'Men come in here who have traveled all over the world, they ask for a certain dish, and not one of the waiters can imagine what they mean. They come to me. There are thirty-six hundred different dishes, and it is hard to keep the run of it. But we find it out. Oh, yes; we have all kinds of men to deal with. When Dom Pedro was here he asked for some queer dishes, but he always expressed himself delighted. People have got over that old idea of crowding a hundred dishes on one bill of fare. It is not considered *en regle* now. A few clever dishes, well cooked, and of the very finest quality that can be got, is what is wanted now. Ten dollars per head is about the outside price for a banquet nowadays, but twenty was not considered exorbitant three or four years ago; of course that includes wines. And speaking of wines—'

"At this point the reporter begged to be excused. The sight of ten thousand bills of fare and five hundred cookery books was enough in one afternoon, and the wine question was postponed. The interview, however, demonstrated that Philadelphia contained the champion collector—so far as is at present known—in this department of literature."

MSS. TYPOGRAPHICAL ERRORS.—Annoying as they must always be to the author, are not always without a show of excuse on the part of the compositor. "Had" can be written so as to be perfectly made, and yet have the appearance of "has" to the typo, and "e'er" to look exactly like "e'en." Of course, if the compositor thought of anything else than to pick up each letter, he would know right from wrong by the sense. But when there is a choice, the wrong path is generally chosen; and this is what happened in Mr. Harding's acrostic.

EARLY HISTORY OF GARDEN FLOWERS.—The *Florist and Pomologist*, in a kindly notice of the late Edward Meehan, remarks: "He was one of the earlier improvers of the fuchsia and other garden flowers. His son, Professor Thomas Meehan, is Professor of Botany in the Academy of Natural Sciences of Philadelphia."

It may be worth noting that the improvement of the dahlia was among the earliest of his hobbies. "Springfield Rival," perhaps, among the first to bring this flower up to the florist's standard, was one of his raising.

He used to experiment largely with seedling chrysanthemums, but he took one called "Webber's Queen" as his standard of excellence, and could never feel that he raised one equal to it.

The first hybrid fuchsia ever raised, was probably "St. Clare." Fuchsia fulgens was introduced from Brazil about 1840. At any rate, in 1841 it bloomed at St. Clare, and was used as the male parent. The female parent, Fuchsia longiflora, was still standing, making a plant probably fifteen or twenty feet high when the writer saw it four years ago.

The seedlings bloomed the following year, "St. Clare" being considered the best of them. So strict was Mr. Meehan's idea of honor that he refused money offers for the plant, because the work on it was done in his employer's time, and it

was given to a leading nurseryman in exchange for new or rare plants, as were all the other good things he raised. The beautiful Clianthus puniceus was raised by him from seed brought home by a New Zealand missionary, and the Diplacus aurantiacus, set down in botanical works as of "origin unknown," was a cross of his between Diplacus glutinosus and D. puniceus.

He was among the first to start the present popular race of silver-leaved geraniums. There was a loose growing variegated kind known as the "Mangles" long in cultivation, and an old scarlet known as the "Salmon." This last was the male parent. From this cross came "St. Clare," which was such a decided advance that it has scarcely yet gone out of cultivation. This was given to or exchanged with the same florist, we believe, to whom "Springfield Rival" dahlia was given.

Professor Meehan's title comes chiefly from his position in the State Board of Agriculture of Pennsylvania, though he also holds that honorary title in other bodies. His position in the Academy of Natural Sciences (except as Senior Vice President) is simply Vice Director of the Botanical Section, to all three of which he has been annually elected for some years past.

A Pleasant Note from a Young Gardener. — A correspondent says: "I do wish that some of our older plant and fruit growers would favor us occasionally with notes of their experience. It would prove of great benefit to all young gardeners, myself included, as I am not yet thirty, and feel I have much to learn from persons older than I am."

Sir Hugh Allan.—The death of the principal owner of the Allan line of steamers reminds us that horticulture, as well as business enterprise, loses a zealous patron. His residence at Montreal was one of the beauty spots of the Dominion, while the more extensive grounds on Lake Memphremagog furnished a specimen of excellent taste in landscape gardening as adapted to wild lake scenery.

The Montreal suburban residence is apparently on about ten acres of ground, and the building is a model of elegance and taste in the hands of abundant wealth. The walled-in kitchen and fruit garden abounds in the best kinds of fruits, and along the most protected sides are extensive ranges of glass, in which peaches, grapes and other fruits are raised to great perfection. The several planthouses are connected with the "ball room" front of the dwelling-house, though they extend away a long distance from the dwelling, and in the main appear as distinct structures. New and rare plants are added as they appear, though majestic specimens of the older and valuable species have their honored places. Perhaps the point of excellence which has made the most lasting impression on the writer of this, who made a hasty call in September last, was the perfect neatness and cleanliness which pervaded every part of the grounds. Not a dead leaf, rotten branch or weed was to be seen anywhere. To our mind there is nothing tests the ability of a gardener as this. The general rule is for places like this to be laid out, with work enough for a dozen men to keep in order, but which the proprietor who never thought of this at the outset, insists must be kept up by half or less. Even when enough to do justice to a large place is allowed, the gardener too often falls into slovenly ways. By this test we should regard Mr. Dunbar, Sir H. Allan's gardener, as among the head of the class.

Joseph E. Johnson.—The Salt Lake papers note the death of Joseph E. Johnson, who is well known to horticulturists and botanists for the interest he took in developing the floral knowledge of Utah Territory. In compliment to his zeal and industry many plants bear his name, as for instance Dalea Johnsonii, being very beautiful flowers.

He was a printer, and a man of indomitable energy. He once went to a new settlement and started a newspaper, setting up the type and printing the whole paper himself, with only a tree and wild nature for the printing office. St. George's, in Utah, especially owes much to his energy.

At the time of his death he was engaged in pushing a new settlement in Arizona, and it is not long since the writer of this had a letter from him speaking in glowing terms of his prospects of success.

The Regulative Action of Birds on Insect Oscillation.—By S. A. Forbes. In the "Bulletin of the Illinois State Laboratory of Natural History, December, 1882, is a scientific paper of great practical utility in regard to the influence of birds in keeping down the canker-worm. The paper is so full of important details that it is impossible to give a brief abstract of it, and those who are able to get it will do well to read the whole. The facts have a great bearing on many practical questions besides the one which Mr. Forbes proposed for solution. The point we have often made, that there is really a very narrow line between insectivorous and frugivorous birds, is clearly brought out here.

Birds will not starve. When they cannot get vegetable food they take to animal, and the reverse under other circumstances. Mr. Forbes shot his birds on the 24th of May, 1881, and 20th of May, 1882, and the contents of the craw showed that all the birds fed on animal food. At that early season there are few seeds to be had. Some birds had seeds of asters and other Compositæ, bristle grass (Setaria, which by the way has the name of pigeon grass in this paper), and seeds of a few other plants which perhaps were kept from distribution under the snow. Birds like the woodpecker seem to have no compunction about stealing the farmer's new-sown corn in a pinch; and such kinds as the yellow bird, riot on insect food.

An interesting item in this experience is that different birds seem to prefer different kinds of insects, but on analysis this is found not so much a matter of gastronomics as of strength or peculiar habits of the bird. The robin for instance was found to use cut-worms and other terrestrial creatures, to an enormous extent. The canker worm, which abounded in the orchard, was barely touched. The yellow bird had two-thirds of the total amount eaten of canker worms. We can see that the superior strength of the robin, and its habit of being frequently on the ground, give it advantages for searching for earth-loving creatures which the yellow-bird does not possess.

As to the leading question proposed, the influence on keeping down the canker-worm, the great question remains in how far does the enormous number eaten by the birds, aid the fruit grower? It is evidently the design of nature that a very large proportion of that which is created shall serve as food for the others, and that after all this has been accomplished, there shall still be enough left to reproduce the species. The forty-five acres of apple-trees of Mr. J. W. Robinson, in Tazewell County, Illinois, wherein these birds were caught, has been infested by canker worms for six years to such an extent that the orchard looks annually as if fired.

Under the pressure of little other food, even graminivorous birds have been compelled to feed on canker worms. Millions must have been annually destroyed, but still the annnal destruction to the leaves of the trees goes on.

To our mind the law is that man must be his own great protector. In the war against insects retail efforts are of little avail. He must either guard his trees so that insect enemies cannot get at them, or wholesale destruction be completely at command.

HORTICULTURAL DIRECTORY for 1883, twenty-fourth edition. Published at the *Journal of Horticulture* office, London, England. This gives a complete list of the nurserymen, seedsmen, florists, gentlemen and ladies who have fine gardens, and their gardeners, of England and the "Continent," which seems to include the United States, Japan and the rest of the world outside of the British Isles. As an illustration of how words change in time in different parts of the world, we note that the districts here are divided into "London, Metropolitan and Country." In this part of the world metropolis is the chief city of a country, and London would be regarded as the metropolis of England, and metropolitan that which related to the city. But in England, as we judge from the Directory, metropolitan is applied to the towns and cities for some thirty miles or so surrounding the city, or distinct from the city itself.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

PORES IN THE ANNUAL LAYER OF WOOD.—A correspondent says: "Will the editor of the GARDENERS' MONTHLY, please help a reader who somehow cannot make out what he means to say on page 20 of the January number. A cut used in Dr. Houghs' "Elements of Forestry," represented the porous part of the annual layers of oak wood, as the inner part of the layer, that is, as the first formed portion of the annual growth. I understood the editor to say, two or three months ago, that the cut was wrong in this respect, and that this porous part, consisting largely of ducts, really belongs to the outer or latest part of each layer. Now, on reading the editorial notes on page 20 of the January number, I can't make out whether the editor means to tell us that the cut was right or wrong in this particular. It must be either one way or the other, and I presume the editor is clear in his own mind about it. But either he has not expressed his mind altogether or else the writer of this inquiry must subscribe himself

A Dull Reader."

[The cut in Dr. Hough's "Elements of Forestry" was right in that respect. The editor of the GARDENERS' MONTHLY was wrong. Ed. G. M.]

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

PREMIUMS AT HORTICULTURAL EXHIBITIONS.—The Georgia Horticultural Society has adopted a by-law which provides that no medal, diploma or money shall be awarded by this society as a testimonial of excellence for any fruit, plant, flower or vegetable offered for exhibition. The verdict of the special committee shall be the highest commendation of the society. We should hardly suppose that such a great departure from established custom will be a success. But there is nothing like a practical test, and we are glad the Georgia Society undertakes it.

It seems to us the true line of reform is in discriminating verdicts, the jury giving the reasons for the excellence, and the society taking the steps by wide publicity to do honor to their own verdict and to the merits of the exhibitor. The most praiseful verdict is of little satisfaction to the exhibitor if he has to put the record of it between the covers of some book in his library. To be of any real value to him he must "blow his own horn," in regard to it in the end. If the societies were to take this "blowing of the horn" in their hands, it might then be some fair set-off for the lack of money premiums. At any rate we are glad that the action of the Georgia Society, looks like the beginning of the examination into the old stupid system of competition which we have so long urged as needing reform.

REPORTS OF HORTICULTURAL SOCIETIES.—It is a pleasure to note that the efforts of the GARDENERS' MONTHLY in the line of judicial comparative reports of committees, are being seconded by Mr. Murkland, the Secretary of the New York Horticultural Society. In his last annual report he says: "And here just a few words to our Committee on Plants and Flowers, and I speak as to men who have the honor to frame a report each month which is read in many different states and abroad, as the report of one of the leading horticultural societies in our Union. Noteworthy exhibits, too, should be described in such a manner that readers who have not been privileged to attend our meetings may have the exhibition tables spread before them in your report. Pardon me if I refer to some of the reports of the past year. For instance, in that of last March we find the following: 'From Wm. Bennett, a Dendrobium aggregatum majus. Extra good.' There are many such comments throughout the reports of the year. Undoubtedly the specimen was 'extra good,' but had I not seen the plant I would have wondered what an extra good plant was like, and if I were an inexperienced orchid grower, with a specimen of the same variety fifteen inches high, having four spikes of thirteen large perfect flowers each, I would have, from reading the report only, vainly wondered how my plant compared with the one shown. And it must be remembered that besides our membership in New York and vicinity we have members in Massachusetts, Connecticut, Pennsylvania, Illinois, Ohio, Wisconsin, and Michigan, whose personal contact with our exhibitions is confined to reading your reports."

AMATEURS AND FLORISTS.—In future there will be two classes of exhibitors in the New York Horticultural Society. Those who grow plants or flowers for sale will not compete with those who grow for pleasure merely.

THE AMERICAN POMOLOGICAL SOCIETY.—This body meets only biennially. The next session will be held in Philadelphia on the 12th, 13th and 14th of September, 1883.

President Wilder is working hard to make this meeting one long to be remembered, in which effort he is seconded by President Schaffer of the Pennsylvania Horticultural Society.

HALL OF THE NEW YORK HORTICULTURAL SOCIETY.—This building, costing $100,000, has been purchased solely by the Amateur Horticulturists of New York, in the pure love of horticulture. Thirty-six paid for the whole, of whom seventeen subscribed $5,000 each, six $2,000, and thirteen $1,000. It is interesting to note that of those interested in horticulture in New York, there are more able to give $5,000 each than of lower sums.

THE

GARDENERS' MONTHLY

AND

HORTICULTURIST.

DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

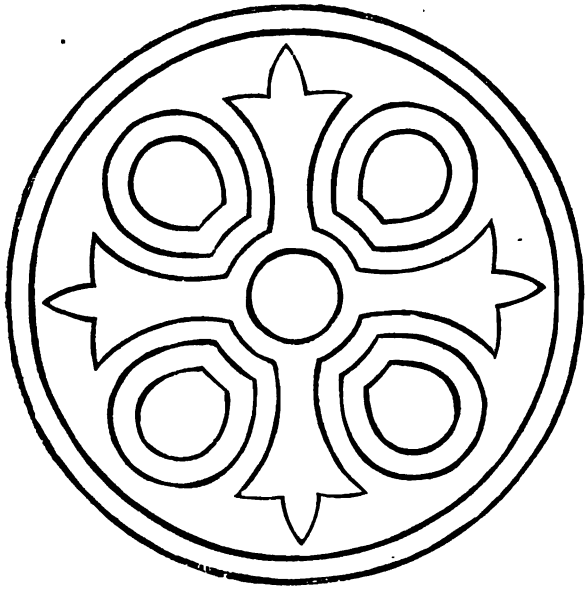
Edited by THOMAS MEEHAN.

VOLUME XXV. MARCH, 1883. NUMBER 291

FLOWER GARDEN AND PLEASURE GROUND.

SEASONABLE HINTS.

In our last we gave a design for a set of flower beds, with some remarks favorable to the bedding



system of flower gardening, as forming a pleasing contrast to other methods of ornamenting gardens and grounds. Herewith is another. They each afford hints from which all may profit, even though it is not possible to imitate the pattern.

In all cases, if flowers have been growing in the ground many years, new soil does wonders. Rich manure makes flowers grow, but they do not always flower well with vigorous growth. If new soil cannot be had, a wheelbarrow of manure to about every fifty square feet will be enough. If the garden earth looks gray or yellow, rotten leaves—quite rotten leaves—will improve it. If heavy, add sand. If very sandy, add salt—about half a pint to fifty square feet. If very black or rich from previous years' manurings, use a little lime, about a pint, slacked, to fifty square feet.

With March, in the Middle States, comes the annual clearing up—the final dressing over the grave of buried winter, and the planting of it with spring flowers and green things. The lawn is always the first consideration, for the "strip of green grass" is often the vivifying germ which warms the citizen's heart into active love for country life. Much as the lawn plays a part in English gardening, it is of much more account with us. Our heats render the grass particularly refreshing. Our droughts are somewhat against our great success—but the charm

of having it, makes every effort for its attainment desirable.

It is well to remember that good health is the preservative of life, and that good, nourishing food is the key to health. Healthy grass will keep green in a dry time easier than weak grass. This is why top dressings of rich fertilizing materials is such an advantage to a lawn. Continual mowings, though the essential practice in making a lawn beautiful, weakens the grass, but the application of good food helps it to recover. At one time the mowings were left on the grass, to make a fertilizer, as it was said. This is not considered good practice now. The shade from the dead grass weakens the living grass in a considerable degree, though not perhaps to the same extent that mowing does.

As this is the season for work, and not for long essays, we may, perhaps, crowd in a few brief hints from experience, especially as the reasons for them have probably been often given in our pages.

Planting trees will require particular attention now; but do not be in a hurry the moment the frost is out of the ground. Cold winds are very hard on newly set out trees. Wait till they are gone. Always shorten in a little the shoots of all trees planted. They will grow the faster for it, and are more certain to live. Evergreens should be left to the last.

Dig garden soil only when the ground is warm and dry. Do not be in a hurry, or you may get behind. When a clot of earth will crush to powder when you tread on it, it is time to dig—not before.

If perennial plants have stood three years in one place, separate the stools, replacing one-third, and give the balance to your neighbor, who has none.

To make handsome, shapely specimens of shrubs, cut them now into the forms you want, and keep them so, by pulling out all shoots that grow stronger than the other during the summer season.

The rule for pruning at transplanting is to cut in proportion to apparent injury to roots. If not much worse for removal, cut but little of the top away. Properly pruned, a good gardener will not not have the worst case of a badly dug tree to die under his hands. In nurseries where these matters are well understood, trees "never die."

Box edgings lay well now. Make the ground firm and level; plant deep, with tops not more than two inches above ground.

Roll the grass well before the softness of a thaw goes away. It makes all smooth and level.

Hyacinths, tulips, liliums, and other hardy bulbs set out in the fall, and covered through the winter, should be occasionally examined, and when they show signs of active growth, must be uncovered; in this latitude this is not safe until towards the end of the month.

COMMUNICATIONS.

VICTORIA REGIA IN THE OPEN AIR.

BY E. D. STURTEVANT, BORDENTOWN, N. J.

In response to your request for an account of my manner of flowering the Victoria regia in the open air, I will say first that I have never claimed that I started the plant otherwise than in heat under glass.

My tank is 20x30 feet and 15 inches deep, built of brick and cement. In the center is a pit 4 feet square and 2 feet deeper than the main tank. This pit is filled with a very rich mixture of loam and stable manure. The tank is situated only a few feet from a greenhouse. Two four-inch hot water pipes (flow and return), are extended from those within the greenhouse to the tank outside, reaching a foot or two inside the wall, and left entirely open at the ends. When heat is required in the tank a fire is kept up in the greenhouse boiler, and the circulation of the water between boiler and tank, maintains the desired temperature. Some might think that water thus heated, coming from the inside of a boiler, and passing through rusty pipes, would be injurious to the plants growing in it. But their perfect health and rapid growth testify to the contrary. Perhaps, Mr. Editor, you can tell us why it is so. My theory is that the exposure of the water to bright sunshine and air, and the absorption of impurities by aquatic plants themselves through the under surface of their leaves, counteracts any bad effects of this manner of heating. This plan is not to be recommended in growing the Victoria under glass. Of course it is desirable to have the plant started early in order to insure early bloom. I place the seed in water kept steadily at a temperature of 85°, being careful always to keep the water sweet and pure. I find considerable difficulty in getting the seed to germinate. In January, 1882, one started but after growing awhile was lost. No more germinated, until April 25th, when one was discovered. This plant was carefully tended and shifted on until the 10th of June, when it was planted in the open air tank and the heat turned on. It then had leaves only five inches in diameter, but soon began to grow rapidly. After being well established it sent up a new leaf every three and one-half to five days, each being six inches more in diameter than the one preceding it. In August they reached a diameter of six feet (exclusive of the perpendicular

rim, which was two inches high), and filled the tank from end to end, crowding upon the side walls, for the tank was too narrow to allow the plant to spread properly.

The first flower bud was discovered in the crown of the plant on the 21st of August. This opened on the evening of the 3d of September, and produced a flower twelve inches across, and so powerful was the fragrance that it could be perceived several rods distant. During the hottest weather of summer no artificial heat whatever was given to the plant, but during September and October, a fire was kept up. A fresh flower was produced every three or four days. As cool nights came on it became more difficult for the buds to expand. The last days of October were quite warm for the season. On the first day of November a fine bud (with the help of loosening a few of the petals, which stuck together at their points), expanded into as large and perfect a flower as any preceding it. About the same time a quantity of perfectly ripened seed was gathered, being the product of the first flower which opened.

The plant was then allowed to perish. At this writing (January 16th), I have a young plant started and hope to flower the "Queen Lily" much earlier next summer than I did last. I have been informed that a gentleman residing near Boston, once spent $9,000 in growing this famous plant under glass. I am confident that if it were more generally known with what little trouble and at what comparatively small expense it can be grown in perfection in the open air, its culture would become more common.

For my own part I consider myself amply repaid for my trouble in the results obtained. A gentleman in Georgia writes me that he grew the Victoria to great perfection of leaf, flower and ripened seed in a carp pond last summer, first having a strong plant to start with.

SUMMER ROSE CULTURE.

BY C. E. PARNELL, QUEENS, L. I.

In the GARDENERS' MONTHLY for August, 1882, page 231, Miss M. W. says: "I have some fifty roses, many of them choice varieties, mostly monthlies, and I would like to so manage them as not to lose one, which if I do will be contrary to my past experience. They grow and bloom well nearly all the summer, yet I think there must be some fault in potting in the fall, as many die during the winter and some after they are brought up from the cellar in the spring."

I infer from the above query that the roses are intended for summer and autumn blooming, and if their growth is vigorous I would ask why take them up at all; why not protect them well during the winter season and thus obtain larger and stronger plants, and more abundant bloom?

In order to protect tender roses properly during the winter season, they should be pegged down to the ground as close as possible, and covered up with six or eight inches of leaves or rough litter; over this place some evergreen branches, in order to prevent the leaves from being blown away. This covering should not be applied too early, not until hard freezing weather sets in, say from December 1st to 8th. In this latitude it is soon enough, for if the covering is applied sooner the shoots may be smothered and destroyed by decay, a certain result of too early covering. In the spring this covering must be gradually removed, a portion about the middle or end of March, and the remainder about the 10th of April, according to the season. If the roses are well established and are strong healthy plants, they will survive the winter, and if Miss M. W. will adopt this method she will obtain more satisfactory results than by taking the plants up and potting them. I hope she will try this plan and report the result.

SUMMER FLOWERING VINES.

BY MR. A. THORPE, WASHINGTON, D. C.

Noticing an article by Mr. Parnell on Ipomæa Learii being valuable as an out-door summer flowering climber, I thought that mentioning a few others which like I. Learii are grown in England, as stove and greenhouse climbers, but whose mission in this country is to embellish our rural and city gardens with their beautiful foliage and lovely flowers, might interest some of your readers, as I believe they are not generally known. I refer to the following:

Ipomæa insignis.—This species has purplish, rose-colored flowers, which are produced abundantly; the leaves are five-lobed, the buds before opening resembling a small bunch of grapes; has tuberous roots, and propagates freely from cuttings made at a joint; when touched by frost can be cut back and kept dormant during the winter months in a cellar or greenhouse.

Ipomæa Horsfallia.—This beautiful species is very similar in appearance to the preceding, with this difference, that the leaves and buds have a bright glossy look as if varnished, and the flowers are a fine crimson; is also very hard to propagate

from cuttings, but unites readily grafted on its own tubers or those of I. insignis; can be wintered over in the same manner.

Ipomœa Michauxii.—Another tuberous rooted species, has beautiful satin rose colored flowers, which are produced in great quantity; very handsome foliage; propagates freely from cuttings; would ripen seed in the Southern States, and can be wintered over like the two preceding varieties.

Ipomœa grandiflora.—(The Queen of the Night.) It is a native of the East Indies; is called by the Hindoos the Moon flower, and is as much admired by them as is the sunflower by Oscar Wilde and his disciples. Too much can hardly be said in praise of this grand Ipomœa; it will without doubt cover more space and produce more flowers than any other summer flowering climber; it is a gross feeder, and a barrowful of well rotted manure is not too much for it; it can be planted with the finest effect in a great many positions, summer houses, verandas, fences, outhouses, etc., which are improved by a covering of its cool, green foliage, and large white deliciously-scented flowers. It is not uncommon in Washington to see it covering a three-story front, run up on wire or stout string. This and I. Learii are first-rate varieties for florists to handle, as they both strike as easy as coleus from single eyes and can be wintered over in two-inch pots in a temperature of 55° or 60°.

Stigmaphyllon ciliatum—Has beautiful yellow flowers, resembling an Oncidium, from which it derives its popular name of the Butterfly Vine. The leaves are fringed with hairs and are a bronzy green color; is tuberous rooted and can be wintered over like the tuberous rooted Ipomæas; propagates freely from cuttings.

Antigonen leptopus—Has beautiful racemes of rose-colored flowers borne on the end of the young shoots, is tuberous rooted and can be wintered over like preceding; propagates freely from cuttings.

Manettia cordifolia.—Bright scarlet tube-shaped flowers; small dark green leaves, which are almost hid by its multitude of flowers; does splendid on low fences, trellis, balloons, &c.; propagated easily from root cuttings.

Clitoria cærulea.—Fine blue pea shaped flowers; free flowering; of medium growth; has a fine effect on a fence. There is also a white flowering variety, C. alba, which is good, but not so showy as its blue brother; are chiefly got up from seed, which they produce freely.

All the vines named like good rich soil and a warm sunny situation.

SINGLE DAHLIAS.

BY GEO. S. WALES, ROCHESTER, N. Y.

The Single Dahlia seems to rage in London, and it looks as though we should have a pretty severe attack here. I flowered them last season for the first time. They were very satisfactory, although there were several impediments to the best results; viz., I sowed my seed late, and the exceedingly dry fall was not at all favorable to free or fine flowering. They are as easily grown as the petunia. Seed was sown in April (it should have been done March 1st) in box in greenhouse, transplanted into two and a-half inch pots, shifted into four-inch, and planted out of doors. They grew very fast, and most of them made very bushy plants three feet high. I was surprised to find such large tubers; some had burst asunder the four-inch pots. Although my seeds were started in the greenhouse, would recommend using the cool ends. They might be easily started in the window box in the house, and when transplanted put into a cold frame until weather suitable for planting out should come. Some that were kept in pots were brought into the greenhouse and continued a long time in bloom, being much admired; if intended for house-blooming, which I think is the most advantageous way of using them, would advise growing them in six or seven-inch pots, plunged during the summer. They did not bloom profusely with me, but were full of buds, and undoubtedly, had the weather been more favorable, they would have been covered with flowers. The colors were white, scarlet, dark red, orange and terra cotta shades.

NOTES ON FLOWER GARDENING.

BY J. B., FREDERICTON, N. B.

Several of your correspondents protest against the present system of bedding out tender exotic plants, &c., in several recent numbers of the GARDENER'S MONTHLY; also in *Harper's Magazine* of March, page 517. The writer says (having reference to the material used at present): "Yet even these, beautiful as they are in their prime, make for half the summer a colorless, disagreeable blot on the lawn. Planted in June, they rarely cover the ground until August, and for the intervening time the bed in which they are planted is a mass of almost naked earth. Before the middle of October they succumb to the frost, and for eight months more they do nothing to hide the bare earth in which they are planted. Eight months of ugliness is too high a price to pay for

two months of beauty. Yet these bedding plants have become the fashion, and fashion is uncompromising in its demands. The gardeners naturally encourage people to buy them, because they bring a good price, and are easily propagated. Thus the continued use of exotic plants for bedding is likely to increase rather than diminish, unless the taste is subjected to rigorous criticism. The only remedy is for men and women of true taste to insist on a better example on their own premises and among their friends. They should not inveigh against color, but should persistently demand from their gardeners permanent plants of color which would be beautiful for a large part or for the whole of the year." The writer gives a number of names which he suggests—dwarf evergreens, vines, &c., less perishable, would be very good and more permanent.

I have no desire to criticise his good article, but would like to reason or make some little inquiries. The gardeners are not to blame, surely, for encouraging people to buy what they have raised to sell; for what business man does not encourage the sale of his merchandise? But that the fashion must be followed under all circumstances is certainly folly. There is no law, either in Canada or the United States, to prohibit ladies or gentlemen from planting their own pleasure ground or garden as their means and taste direct. This would be common sense. In one of our local papers the editor quotes from a Paris paper, which will illustrate my meaning. Each leading dressmaker of Paris makes dresses according to his or her own fancy, and if possible different from all others. Hence the variety in styles. Those who wish may apply this to gardening. As between ladies' fashions and flower garden fashions, I think the former are the neatest. So with reference to the present style of flower gardening, it is neat, rather than gaudy—a modest style. There is the Golden Dwarf Feather, which stands the winter here 30° to 40° below zero. Also the Golden Thyme Sage variegata will stand out from the middle of May to November. The dwarf variegated grass—Poa rivalis variegata does well for sections; it stands out here until November, as do several kinds of Dusty Millers. These are used in quantity in the present style with pansies. The various kinds of Echeverias may be planted out here from the middle of May to the latter end of October, are easy to winter propagate, make pretty patterns with other things of dwarf kinds. These, with others, are hardy enough and make the season quite as long as the flower garden is appreciated. Of course there are the Coleus, Canna, Alternanthera, Geraniums, &c., which are bedded out in quantity, though not in their beauty, all through the season. But from my own experience in bedding out some of the dwarf Retinosporas enumerated in *Harper's Magazine* for bedding do not give satisfaction here. They are slow in growth. They may do better with you. As to these hardy herbaceous plants being recommended for general cultivation, I think that day is past. There seems to be a craving in human nature for that which we have not. Rarities, new forms and colors and exotics are more appreciated than those hardy things. But all are good in their place. Every garden of any extent should have aspiring double Hollyhocks, improved perennial Phloxes, tall, hardy ornamental trees, lilies, roses and early spring bulbs, as one of your correspondents mentions. In conclusion, I think the gardeners do not fear our friend's rigorous criticism in reference to easy-got money. In my very small way of selling, I aim to raise what the people want, tender or hardy. When the people cease to want these tender plants the gardeners will soon stop raising them. My experience in selling generally has been that those who buy in any quantity want to spend as little as possible. They all would like a very nice, neat, well-kept garden. But their means are often an obstacle in the way, so that the garden must be furnished as a matter of course each year. But it is not so much quality as quantity with most that have to buy. Coleuses look showy, and we can sell them cheap. Such has been my experience with the sale of material for the flower garden. Those who are able to keep gardeners do things in a different way.

[The improvement of style in flower gardening is a very interesting topic, and our correspondent's views will attract the attention which they deserve. There is much to be said both for and against the present favorite massing system, and for the herbaceous plants, permanent vines and shrubs and other methods of adorning grounds. But we must not forget that the human mind loves variety and change, and some will be perfectly willing to have flower beds bare for months if the result is something unique which they have not seen before in the other half.—Ed. G. M.]

EDITORIAL NOTES.

TWO FINE NEW BEDDING PLANTS.—Mr. H. A. Dreer sends us two new plants, Coleus "Progress," and "Gynura aurantiaca." The latter has been

well praised in Europe as a bedding plant, and from the looks of this specimen we think it well deserves all the good things said of it in the old world.

ROSA POLYANTHA.—The chapter on this rose by our correspondent from Louisville, Mr. E. Hibbard, has been translated into French, and appears in the January number of the *Journal des Roses.*

CLEARING WEEDS FROM WALKS.—Salt is sometimes applied to gravel walks and roads in a liquid state, or in the form of strong brine used quite hot, or as near the boiling point as possible. This is said to be very effectual in preventing the growth of weeds. Sundry other solutions are also recommended for the purpose. But I know of nothing more effectual than a liberal dressing of dry salt, sufficient to whiten the entire surface of the gravel. A slight sprinkling is of little use, and may even increase rather than diminish the evil which it is intended to cure. In applying such a dressing as has just been recommended, it is, of course, necessary to exercise caution, in order to prevent the salt coming in contact with the grass, box, or other plants, which may form an edging to the road or walk operated on. In my garden last year some walks which were salted early in the season have been free from weeds all summer.—*Gardening Illustrated.*

THE DERBY ARBORETUM.—This beautiful plot of eleven acres, given some forty years ago to the city as a public park, by a citizen named Strutt, and laid out in arboretum style by J. C. Loudon, the distinguished landscape gardener of that day, has recently been opened freely to the public amidst the universal rejoicings of the citizens of Derby. Mr. Strutt willed that the ground should be given on condition that it should be open free on Sundays, that the working people of the week might enjoy it on that day, and as often in the week as the funds would permit. Only now has the corporation been able to carry out the wish of the founder, and make a free park every day in the year.

It may be noted as showing the greater wealth of arborescent plants adapted to American gardening over those in England, that though every effort was made to put in the Derby arboretum every ligneous plant that would thrive in Britain—two plants of each kind—the number of species and marked varieties was only 401—802 plants in all. While at the American Centennial, 750 species and marked varieties from the Germantown nurseries were on exhibition, and 1,000 had been prepared ready to ship to Paris for that exposition, had not the strict "letter of the law" been invoked by Senator Krantz, the Director, who could not think it proper to treat with an American citizen directly, instead of through the government, for space wherein to plant them.

ROSE JEAN LIABAUD.—In correcting proof of a correspondent's article, we were taken to task for changing the n for a u. We now note from the *Journal des Roses* that the name is as we guessed—Liabaud, not Liaband.

THE MIST TREE.—This is commonly known by this name, though sometimes as Green Fringe, but in England the common name is Wig-tree. Botanically it is Rhus cotinus.

CACTUS HEDGES.—These are becoming popular in Texas.

HEDGES OF CONIFERÆ.—In America we have learned that any kind of coniferous plant makes a good evergreen hedge if trained in a coniferous style. Hedges of Scotch pine, white pine, Norway spruce, hemlock spruce, red cedar and arbor vitæ are not uncommon. There are, however, a few of the rarer kinds not yet come into use which would add much to the pleasure of our present variety of these. The London *Journal of Horticulture* says of the Californian arbor vitæ:

"There are few if any conifers that will form a more beautiful hedge than Thuja gigantea, usually sold under the name of T. Lobbi. It is hardy, retains its bright green color throughout the winter, and is close yet elegant in appearance. T. occidentalis is cheaper and makes a good hedge, but in light soils is apt to get thin at the base. We have seen ornamental hedges of the Cedrus deodara, Abies excelsa and Cupressus Nootkaënsis (often sold as Thujopsis borealis), and good, compact fences of Cupressus Lawsoniana; but the firmest, closest and most durable of conifer hedges are those of the yew, but it is of somewhat slower growth than most of the other trees named, and its dark color may not suit your taste. In planting to form hedges young trees should be inserted from one to two feet apart according to their size, the ground being trenched and manured to promote free growth."

It may, however, be remarked that here in Philadelphia, Thuja gigantea is of a yellowish green in winter, as well as the Thuja occidentalis, the common arbor vitæ, though it is more shining and vigorous than the common form. The Lawson cypress, and Californian white cedar (Libocedrus decurrens), are the brightest green in winter that we have. The yellow cedar (Cupressus Nootkaënsis), makes a dense hedge, but that has a yellowish cast in the winter time.

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

FLOWERS IN NORTH WINDOWS.

BY MRS. R. B. EDSON.

"How do you manage to keep your north windows full of flowers all winter?" was asked of the writer not long since. While claiming nothing original or unusual in the management—for there is a certain "management" about it—it might perhaps be of service to some unfortunate believer in the no-flowers-in-a-north-window theory, to give in the MONTHLY the reply given to the above question.

The windows above referred to are two long windows reaching to the floor, and facing northeast. To begin with early October, fuchsias, tuberous-rooted begonias, salvias and carnations. All but the last flower quite as well, and last much longer in full beauty than if exposed to full sunshine.

Chrysanthemums are by this time showing color. By first bringing in the most advanced ones, and following them up by later sorts, Christmas is reached with but little diminution of attractiveness. Like most other flowers, they remain in perfection three times as long as when in full sunlight.

During this time the geraniums are kept in a south window. A chamber where it does not get cold enough to freeze is a good place, or any south or southeast exposure, where they can get the benefit of the sunshine three or four hours daily. They will soon be full of buds, and as soon as they begin to open they are placed at these north windows, and go on blossoming as if nothing had happened. The trusses average a full month without fading, and the individual flowers are much larger than if bloomed in a south window. By a little care in changing them occasionally, giving each their turn in the south windows, there is no difficulty about having an abundance of geraniums in perfection in north windows till May. Of course these plants are not old ones that have flowered all summer, and become exhausted, but young plants, rooted in the spring—or at the latest in August—and specially grown for the purpose by being kept in pots and the buds rubbed off through the summer.

Chinese primroses and oxalis also bloom finely in a northern exposure, and these need no preliminary preparation. I had in October some young plants of Salvia splendens, which came up from self-sown seed. Some of them have been in flower ever since, and still are at this writing, January 18, and one has not yet bloomed but is full of buds. They are kept in the north windows continually. Among annuals, Nicotiana suaveolens succeeds admirably. Given the same treatment as geraniums, it will go on flowering for three months without a ray of sunshine. I am trying for the first time this winter, the Calendula, or double pot marigold, treating them as I do the Nicotiana. They are marvels of luxuriant growth, well filled with buds, and just now coming into flower finely. For green and white foliaged plants, I find Geranium Happy Thought, and Coleus Retta Kirkpatrick—this last for the upper shelf—the best and most showy for small plants. For large plants, Palms, Ficus elastica, Cyperus variegata and Aspidistra variegata are all well-known, admirable sorts, beside a host of others. I only intended, however, to speak of flowering plants in this brief note.

NOTES BY THE WAY.

BY WILLIAM FALCONER.

Pteris tremula.—Hardy and wild in Connecticut! Where? (See page 3.)

Euonymus radicans.—You have, more than once, called attention to the usefulness of this evergreen for covering walls. We have it here, and I like it much for covering boulders in the rockery and the like; but with us, at any rate, it does not grow enough for an effectual wall vine. It is quite hardy and a pretty evergreen.

Steam Heating in England.—In conversation with several practical horticulturists in England, a month or two ago, I found they had a strong prejudice against heating greenhouses by steam. They were not at all surprised that the method gave satisfaction in America and was being adopted to a considerable extent by our florists! Don't be too egotistical, John, American florists may know quite as much as you give them credit for.

The Lime Kiln System of Heating.—Yes, just

think of it to-day and what it was ten years ago! We remember that system at the Marquis of Salisbury's, at Hatfield, and at the Glasgow nurseries, and elsewhere in the kingdom, and the furor it created at that time, and the cry that went up throughout the land regarding its efficiency and economy! But where is it to-day? As Mr. Bullen, the curator of the Glasgow Botanic Garden, said to me: "It went up like a rocket but came down like a brick."

Pharbitis Leari.—Seeds cost about one cent each and you can get them from our leading seedsmen. They germinate readily and the plants grow vigorously, indeed there is nothing delicate about them beyond their being tender. Started early and planted out in rich soil and an open exposure, it blossoms freely the first season. Like most of the rampant morning glories it grows too much for my taste for greenhouse work. Indoors it is a bait for red spiders and mealy bugs; it requires daily hosings to keep it clean.

Chrysanthemums.—You refer, page 10, to the fine show of chrysanthemums in the Fairmount Park. So far as individual blossoms are concerned, I have seen nothing in this country to equal some that I saw in England last November, when the chrysanthemums were in their glory, but when it comes to handsome specimen plants, and lots of blossoms on a plant, you need not go to London, but instead drop into Horticultural Hall, at Boston, on "Chrysanthemum Day," and I think you will agree with me that Walcott, Woods, and Clark show finer plants than you can see at English shows.

Seedling Chrysanthemums.—In addition to the seedlings raised and bloomed in 1881 by my neighbor Dr. Walcott, he raised and bloomed a great many more last year (1882), and from seeds saved by himself from his own plants in 1881. Some of these seedlings are of good merit, especially two named President Parkman and President Wilder, and for which the Massachusetts Horticultural Society has awarded him a silver medal. Another he calls "C. M. Hovey," is also a good flower.

The Chrysanthemum, ever since its introduction into Europe, has been a favorite in cottage as well as pretentious gardens, because it blossoms so copiously in late fall; sometimes a severe nip of frost mars it in its early bloom, but again, in mild seasons, its duration extends into November. Apart from the ordinary section commonly grown as pot plants, there are varieties of C. Indicum nanum remarkable for their early blooming, coming into blossom as they do in August and continuing in beauty till their stronger relatives begin to flower. Friend Burbidge has just written a book on the Chrysanthemum; Mr. Robinson, of the *Garden* will publish it.

HOT WATER AND STEAM HEATING.

BY WALTER ELDER.

In reply to the inquiries of your correspondent, E. Holley, I may state: 1st. The number of radiating pipes required to heat his plant-house 100x20 feet will depend on its situation, the workmanship and material in its construction, and the free flow of the pipes. 2d. The greater surface a heated body exposes to a cold atmosphere, the more heat it gives out. Many pipes emit more heat than few; so that the bore of the pipes as a whole equal each other; smaller pipes are more economical. 3d. The ascent and descent should be as gentle as possible. 4th. Hot water is safer and as cheap. Where gentle heat is needed the water is not allowed to boil, but to make steam it must boil; 212° Fahrenheit boils water. Plants could not live in that, but the steam carries off the heat to the colder parts of the house. There is danger from explosion by steam, but there are safety valves for both hot water and steam systems to prevent this danger.

For forcing cut flowers, and propagation of tropical plants in winter, steam heating and many small pipes are best. Either hot water or steam is preferable to drying brick flues.

They both will maintain a good heat from 10 P. M. to 7 A. M., but if the temperature outside falls greatly through the night, or a fierce frosty wind strikes against the house and sweeps over it, the temperature inside the house will surely lower. Much depends on a careful fireman and the kind of fuel he uses.

The cheapest and safest plan with the iron pipes is to let the furnishers put the whole up and strictly follow their directions in the future management.

All the boilers advertised in the MONTHLY are great improvements on those of long ago. It is about fifty years since I first saw both hot water and steam heating used in planthouses, and forcing pit frames for pineapples, in North Europe.

The larger the boiler surface exposed to fire, the more heat it takes in, and the flow of the heat goes faster and farther, either by water or steam. In that there is a large economy in fuel.

[These general hints will be found very useful to the novice, but we may remind the reader that though the question has been often asked in our

columns, no one has answered why hot water pipes must be made to ascend. Hot water as well as cold will travel faster going down hill. Ed. G. M.]

MARECHAL NIEL ROSES UNDER GLASS.

BY W. F. MASSEY, TOWSONTOWN, MD.

We have here a house 16x75 feet, which is used as a Marechal Niel rose-house. This house is span-roofed, and contains five plants, two of which will have to come out in the spring, as they are getting too much crowded. These vines are planted in one line through the center of the house, and are both budded and on their own roots as follows: Plant No. 1 is worked on Noisette, Madame Longchamps. No. 2 is on its own roots, as also is plant No. 3. No. 4 is worked on a free-growing pink Noisette, name unknown. No. 5 is worked on Solfaterre. As this house has become noted hereabouts for its production of buds, it may be of general interest to note the difference in these plants. No. 1 is at the southwest end of the house (which runs northeast and southwest), and in winter is shaded by the brick gable end of the house more than the others. It has made strongest growth of any, and produces more bloom than any two of the others, but seldom gives as many buds at Christmas, on account of its position in reference to the sun at that season, though its eastern bloom is usually magnificent. Nos. 2 and 3 have made a fair but moderate growth, but nevertheless are the most unproductive plants in the house. No. 4 has grown splendidly, and next to No. 1 is the most productive of all. This is our Christmas plant. No. 5 has grown enormously, and though in the most favorable position in the house has as yet proved rather unproductive in comparison with the other budded plants. These roses are now in their eighth winter, and the stems of Nos. 1 and 5 measure in circumference over twelve inches each. I have never kept any account of the number of buds cut in a season, but have on more than one occasion cut 250 buds at one cutting, nine-tenths of which were from the three budded plants. Just now I am in a quandary. The house is too full of wood, and some of the plants must be removed. A gentleman in this neighborhood, of large experience, prophesies that my budded plants will eventually die from decay at the point of insertion of the bud stock. There is, in fact, some bursting of bark and slight decay at this point. The plants at the extreme ends of the house (Nos. 1 and 5) would fill the house in one summer if all the others are removed, but before removing any I would like to hear the experience of others with budded roses under glass, as to their permanency. My practice with these roses has been to remove the glass from over them in May and let them grow unchecked during the summer.

The sashes are replaced in October and the plants pruned. At this Autumn pruning I try to preserve a full supply of strong, well-ripened canes of the summer's growth, and prune out the weak growths and the old stunted stubs. These long canes will, if well ripened, soon be strung with buds on short side shoots. These are the buds for Christmas and midwinter. After this crop is about over, I go over the plants again, and spur in the shoots that have bloomed close to the cane. This usually gives me an abundant bloom for Easter, and on till the glass comes off again. Many critics say I prune too much, but with me "the proof of the pudding is the eating of it." I get as large crops of buds as any one I know of, and am perfectly satisfied with the pruning. Your correspondent, on page 360 of December number, says the plants on their own roots will decay, though mine show no signs of it. Now which am I to remove, the budded plants or those on their own roots?

HEATING A SMALL PLANT HOUSE.

BY R. W. DAWSON, LITTLE ROCK, ARK.

I see by the January number that Miss W., of Quaker Hill, N. Y., makes inquiries about heating a small plant room or greenhouse. I have a greenhouse 11x24, that I have kept warm all winter so far, with oil stoves, and I have no trouble in keeping heat anywhere from 50° at night to 80° in the daytime. I use two oil stoves. Each has two four-inch wicks, and so far I have used about one gallon of oil for each stove every twenty-four hours. I have the stoves on the ground, under the bench, fastened by wire to the bottom of the bench. I have common stove pipe, which runs the full length of one side, and across the end, and one-third the way down the other side. Then it runs up, and out at the top of the house. I have a common elbow where the pipe commenced, and under that I set one stove, and two-thirds the length further down (or 16 feet from the first) I have what the tinners call a T elbow, that is an elbow in the shape of the letter T. So that the pipe connects all the way. The piping is up high enough, so that I can take stoves from under the

pipes and trim and fill them, and the cold air passes up into the pipe, and so keeps the greenhouse in a nice even temperature. I have geraniums, pinks, fuchsias, hibiscus, heliotropes, verbenas, tuberoses and other plants in bloom, and everything seems to be doing well, so that by spring I shall have more than the house full. The thermometer outside has been down to 10° above zero two or three times this winter, yet I have kept the greenhouse with only the two stoves, so that the heat has never been lower than 48° at any time. For a small greenhouse, I think the oil stoves are just the things in connection with stovepipe.

By the way, I like the GARDENERS' MONTHLY very much, and shall soon send for some of the books your publisher has for sale, as I want everything that talks and teaches about flowers. I think some of them almost talk. Pansies seem to laugh every time you look at them.

CULTIVATION OF STRELITZIA REGINA.

BY CHARLES E. PARNELL.

In the GARDENERS' MONTHLY for May, 1882, page 141, H. G. C. asks for information concerning the Strelitzia regina.

In reply I would say that the Strelitzia regina belongs to the natural order Musaceæ, and that it is a native of the Cape of Good Hope, from whence it was introduced in 1773.

It is a plant of tropical appearance, having long oval leaves produced on leaf stalks from three to five feet in length, while the singular flowers are produced on stout erect flower stalks which are somewhat longer than those of the leaf stalks.

Each stalk produces four or five splendid large flowers which open in succession from a curious horizontal spathe-like bract, and stand up like a crest of purple and gold, the lanceolate shaped sepals being from three to four inches in length and of a rich orange yellow color, while inside of them are the three hastate upright light blue petals which enclose the stamens and style, the whole forming a peculiar and singularly attractive flower.

The Strelitzia is a plant of easy culture, requiring during the winter season a temperature of from 55° to 60°, a compost of two parts turfy loam and one part well rotted stable manure, give good drainage, and at all times an abundance of pot room for its thick fleshy roots. When growing water freely, but when in a dormant state do not supply quite so much, yet it must be kept moist at all times, and an occasional watering of liquid manure water is beneficial. During the summer season the plant should be placed or plunged in a sunny situation, care being taken as to watering.

Propagation is effected by division of the plant. This should be done very carefully in order not to injure the thick fleshy roots, and when re-potting take care of the roots, for if they become injured they are liable to decay and thus materially injure the growth of the plant.

AIDING THE DRAFT OF FLUES.

BY E. S., EMPORIA, KANSAS.

I am just a beginner in the florist's work and have many things to learn yet. I may stumble on something that may be of use to others and it is no more than right I should make it known.

During the last ten days we have had cold, damp, disagreeable weather. At the commencement of this kind of weather, my furnace refused to draw, and consequently the pipes used to heat the greenhouse remained cold. I asked every one whom I thought ought to know what the matter was, and for a remedy I got plenty of solutions with remedies, most of which I tried with no success. At last I thought of the manner of starting up a sluggish fire we used to practice in the anthracite coal regions of Pennsylvania, viz., to throw cold water on the burning coals. This I did by putting about a quart of water in a manilla paper sack and tying it, then tossing it into the fire, closing the furnace door quick, and in an instant it exploded, clearing the furnace and pipes of the accumulated gas, and in twenty-five minutes the pipes, which had been cold for thirty-six hours, were hot, and the furnace stopped smoking at once. I have tried this four times during the past ten days with the same effect each time, and while the wind was in different directions, so now my pipes, which are cement drain tiles, heat as well or better than they did the first day I made a fire. Should any one who uses soft coal experience like difficulties with myself, I am sure a trial of my experiment will prove satisfactory.

[This appears to be one of the many valuable discoveries which, after being made, one wonders was never thought of before. Every one knows by this time light air ascends because a heavier column of cold air forces it upwards. Light air goes upwards in the same manner as a stick in water is forced to the surface. Gravitation draws down the heavier water and the lighter stick has to go up. When we light a fire for the first time in a damp or

cold chimney, all the heat the little fire makes is absorbed by the neighboring bricks, and there is very little warm air left for the heavy column of cold air in the chimney to force up. In fact it presses down on the fire and rather forces the draft out of the furnace door than upward. The expansive power of a little steam would therefore most likely force the column of cold air onward and the weak amount of heat from the fire would naturally follow.—Ed. G. M.]

A PRODUCTIVE ROSE.

BY JAMES W. DOHERTY, NEWPORT, R. I.

The following are the number of roses I have cut from one Marechal Niel rose-bush in one year:

Oct. 28	137	June 1	125	Aug. 1	103
Nov. 4	337	" 7	50	" 2	112
" 6	50	" 10	45	" 3	178
" 11	320	" 11	100	" 4	207
" 19	130	" 13	54	" 5	250
		" 14	51	" 6	213
	974	" 16	51	" 7	113
Dec. 1	26	" 18	57	" 8	131
" 2	30	" 19	45	" 9	131
" 24	35	" 20	26	" 10	77
" 31	38	" 21	31	" 11	79
		" 22	16	" 12	69
	129	" 23	18	" 13	70
Jan. 12	84	" 24	16	" 14	47
" 13	46	" 25	10	" 15	40
" 14	75	" 26	8	" 19	10
" 21	275	" 27	6		
" 28	403	" 28	7		1,830
		" 29	6		
	883	" 30	8	Sept. 10	7
Feb. 4	250		780	" 13	8
" 11	255			" 15	7
" 18	95	July 1	6	" 20	5
		" 2	6	" 21	5
	600	" 3	5	" 23	3
March 18	100	" 4	10	" 24	5
" 22	196	" 5	18	" 25	4
" 25	323	" 7	7	" 26	5
" 30	75	" 9	6	" 27	18
		" 10	10	" 28	30
	694	" 11	18	" 30	21
April 1	300	" 12	18		118
" 8	200	" 13	15		
" 9	80	" 14	19	Oct. 1	45
" 10	75	" 15	19	" 2	23
" 12	12	" 16	18	" 3	68
" 13	310	" 18	5	" 4	50
" 15	230	" 19	20	" 5	53
" 16	152	" 20	19	" 6	30
" 21	38	" 21	10	" 7	33
" 25	30	" 22	18	" 8	45
		" 23	20	" 9	43
	1,422	" 24	5	" 10	31
May 7	50	" 25	44	" 11	14
" 10	25	" 26	21	" 12	19
" 18	25	" 27	30	" 16	29
" 24	30	" 28	50	" 21	31
" 28	25	" 29	52	" 26	10
" 30	130	" 30	87		
		" 31	66		519
	285		622	Total	8,806

HEATING BY COAL OIL LAMPS.

BY N. BUSBY, BURLINGTON, N. J.

Having had a short but very satisfactory experience in the use of coal oil stoves for heating small conservatories, I would have no hesitation in recommending them. I use mine at present more as an auxiliary.

Having built an addition last year to my greenhouse, and not wishing to go to the expense of enlarging the flues, I procured a No. 3 Florence stove, holding about three quarts, with three wicks, and would not be without it. One night, with the thermometer outside at 18°, I raised the temperature some 6° in twenty minutes, and that in a house 12x30, glass on three sides. The heat is steady as long as the fuel lasts. By actual test, with the above mentioned supply, mine has burned fifteen hours. I think seriously of putting one in my fernery next fall. I think Miss W., of Quaker Hill, N. Y., would find one of these stoves the very thing for the purpose she desires.

NOTES ON HOT WATER HEATING.

BY SAMUEL C. MOON, MORRISVILLE, PA.

"Get the water into an expansion tank at the highest point as quickly as possible and let all the pipes descend from that tank through their whole length until they re-enter the boiler."

This is the substance of a remark once made by an old experienced florist and boiler-maker of Philadelphia, when conversing about greenhouse boilers and hot water heating. Since then I have acted upon the suggestion and put it to a practical test, and am thoroughly convinced that it is the most rational and effectual plan for heating greenhouses.

The circulation of water in pipes is caused by the variation in the specific gravity of water as its temperature varies. It is started and kept in motion by the application of that at the lowest point.

The warmest water always rises to the highest accessible point, tending to create a vacuum in the place whence it emanates, while cooling water is continually settling towards the lowest point and will enter the boiler by the lowest inlet, to replace that which has arisen.

"Hot" and "cool" are only comparative terms and we may say that the only "hot" water there is about a greenhouse heater is in the top of the boiler, because it commences to cool immediately upon leaving it, therefore it should commence to settle or flow down hill from that time. For this reason the water should rise perpendicularly from the top of the boiler into a capacious expansion tank situated several feet above it, and then flow down hill all the way around the houses until it re-enters the boiler at its lowest part, having a reg-

ular descent throughout the entire length of from six to ten inches in one hundred feet.

There is then no need of expansion tanks in any other part of the arrangement.

Where the position of the boiler or the construction of the buildings will not admit of such an arrangement, take the shortest practicable line to the highest point accessible, and make the expansion tank there. I am not prepared to say what the elevation of the tank should be, but believe that for large boilers it should be at least ten feet.

Heat is the disturbing influence that starts and keeps the water in motion. The rapidity of circulation (upon which depends the heating capacity of the water), is governed by the amount of pressure upon it and the intensity of the heat in the furnace. Therefore it is necessary to have the expansion tank elevated considerably above the pipes so that there will be a head of water exerting a continual pressure on every part. A displacement of water in any point is then quickly felt throughout the whole system.

A gradual descent of pipe all the way around, with as few bends and turns as possible is the simplest plan that can be adopted, and will give the most perfect and economical results; however it is possible to make an endless variety of digressions from this rule, and still keep up a circulation which will be more or less retarded by every variation from the direct course.

A pipe may vary from a straight line in any way, provided there is a vent-hole for the escape of air at every point where it changes from ascending to descending grade. It may have a grade of ten inches in ten feet, or drop perpendicularly for several feet, and then fall only a very few inches in the next hundred feet, if necessary, but all such irregularities should be avoided as far as possible.

It is a matter of the first importance that there shall be no elevated points in which air can accumulate, because water will not circulate freely through pipes which contain air chambers.

There is always a considerable quantity of air in water, some of which is expelled by heating. This may be observed by standing a tumbler of water in a warm place. In a short time small bubbles of air will be seen on the inside of the glass which gradually rise to the surface of the water and disappear.

The air which is liberated from the water in a boiler or its connections rises to the highest part and flows on top of the water as long as it can ascend, but it will not flow down hill. If there is an opening at the highest accessible point the air will escape, if not, it remains there occupying space which should be filled with water.

Sometimes heaters which worked very well at one time become deranged by the settling of a pier or other disturbing cause, making a depression in a pipe at one spot, thus forming a barrier to the flow of air which wholly or partially checks the circulation of water.

The remedy for such a defect is to straighten the pipe so that the air can rise to some higher point of escape or else drill it at the summit of each undulation, and insert a stop-cock or other arrangement which can be opened occasionally or constantly for the escape of air.

There is, however, no necessity for vent-hole or other opening throughout the whole system of pipes if the expansion tank is at the highest point, and all the pipes *descend* from it through their entire circuit. In such an arrangement the air which is liberated in any point can always ascend, and will find its way up to the tank and escape there.

NEW OR RARE PLANTS.

NEW DOUBLE BOUVARDIAS.—Messrs. Nanz & Neuner send us flowers of two double scarlet bouvardias, one more double than the other, which seem to be of the leiantha class. They are therefore very distinct from those heretofore raised, and will probably add a new item of interest to these very popular winter blooming flowers.

DIEFFENBACHIA AMŒNA.—This is one of the Arum-like family, now becoming so popular among leaf plants. It is thus described by Mr. W. Bull, the introducer: "An effective variety of this showy race of Arads, obtained from the tropical regions of South America. Its oblong acute leaves are of a deep green, marked with very abundant elongate blotches of white and pale yellow, which are as well defined on the under as on the upper surface. It is a very attractive plant, on account of its bright and abundant maculation." (See cut page 77.)

SCRAPS AND QUERIES.

STEAM HEATING.—We shall have an illustrated article in our next by Mr. C. F. Evans, of Philadelphia, on "Steam Heating," which will explain very clearly much that mere letter press will not.

GROWING CARNATIONS.—The following letter to a distinguished botanist has been handed to us with the suggestion that the writer would perhaps

find a reply in our pages. We shall have much pleasure in replying to any further inquiries, should these not be clear enough:

"What fire heat would you give carnations or roses night and day, also what sun heat to produce cut flowers, especially in winter.

Dieffenbachia amœna. (See page 76.)

"Carrick, Pa.: I thought I would drop you a few lines asking you if you would be kind enough to give me the following information:

"What amount of moisture ought to be kept in a greenhouse to grow the above? When growing wood to produce flowers, also when flowering, or

is it better to keep them flowering and growing at the same time, as I have a hygrometer.

"Which will produce the most flowers, and the quickest way? By growing plants (when first put in greenhouse) cold, and when they have formed their buds pretty well, to force them with fire heat, or to force them as soon as put in, until they have formed their buds; by having a moist atmosphere and then flower them with a dry atmosphere? For I have noticed that I get more flowers of my plants that are outside when a dry spell comes, but I have never been able to find out those points, for I either dry too much or not enough.

"Has there ever been such an instrument, equally simple and efficient, as the thermometer, with which we may ascertain the proportions of its gaseous elements, so as to regulate the constituents of an atmospheric volume as easily as we can its heat?

"Now the reason I ask you these questions is this: I am a poor man and have started in the flower business on a small scale. I never was able to go and learn under some good man. I know nothing about botany; all I know I have studied myself, and if you will please be so kind as to give any or all the information you can I will be ever so much obliged. From what I have heard of you, you surely must know something about flowers, and I hope to be able to compensate you in the future should you do anything for me. For I never want a man to do anything for me for nothing. Perhaps you may know of some good books that I can get on raising carnations, roses, violets, hyacinths, and lily of the valley; or is there any books published on botany that would be of any practical benefit? Hoping you will do me all the favor you can, and that you will please excuse my inquisitiveness, as I am an entire stranger to you, I close for the present, hoping to hear from you soon and oblige."

[Winter blooming carnations do not like heat, but desire all the sunlight they can possibly receive. Nor do they like a moist atmosphere. Florists put in the cuttings about February or March, in boxes, and about May set the young plants out in a rich piece of ground, pinching them back several times during the summer to make them bushy. When frost is imminent, the plants are taken up with balls of earth, and set in benches in the houses. A temperature of 55° is quite enough to force carnations.

There is no instrument in use among florists similar in value to a thermometer for the purpose indicated. Cultivators have not found the need of any such instrument.

There are no especial works devoted to these flowers, but the correspondents of our Magazine keep the readers posted on all that is new on these topics, and are generally ready to give all they know of older matters whenever inquiry is made. —Ed. G. M.]

WINDOW PLANTS.—H. C. W., Saxton's River, Vermont, asks: "Will you please inform me through the MONTHLY if Anthurium Scherzerianum, Lapageria, Doryanthes Palmeri, can be grown in a large sunny bay-window? If so, will you give the necessary culture.

[These plants require atmospheric moisture to thrive properly, and are scarcely the plants for a bay window, as we generally see them contrived. —Ed. G. M.]

FRUIT AND VEGETABLE GARDENING.

SEASONABLE HINTS.

However much some may regard the cause of fire blight in the pear a mystery, there is no doubt about its being far less serious than it was a few years ago. The leaf blight and other blights are still about the same, but these are trifles as compared with the fire blight which would often destroy comparatively large trees in a few days. It is now clear that Mr. Barry's original advice to the sufferer was sound. This was that the best remedy for a fire-blighted pear tree was to take it out at once and plant another in its place. Those who followed this advice from the first have many of them plenty of pears now. In all the discussions on this question, some things have

been found which are undoubted. For instance, the fact that a new tree placed in the spot where one has been killed, and yet thriving perfectly afterwards, shows that the evil was not in any way connected with the soil. And then the fact that in some districts where the disease did appear, there were often many trees wholly uninjured is against any idea of general climatic influences against the success of pear culture. It is no serious cause for discouragement, even should any one believe that there has been nothing learned about the origin of the trouble. He may yet have pears, if he will but set out trees. Those who believe that fungus spores enter through the bark and cause the trouble, will continue to wash the bark of trees if they can get time or opportunity.

Whitewashing the stems of orchard trees has a very beneficial effect in clearing away old bark and destroying the eggs of innumerable insects. The white color is bad; throw in a little soot or some other matter to make it brown. In greenhouses sulphur has been found of benefit in keeping down mildew. Possibly if mixed with the whitewash in tree dressing, it might do good against fire blight, and such like fungoid troubles.

In fruit growing, remember that fruits are like grain and vegetable crops, in this, that they must have manure to keep up the fertility. Unlike vegetables and grain, however, their feeding roots are mostly at the surface. It is best, therefore, annually to top-dress fruit trees. If manure cannot be had, any fresh earth from ditches or roadsides, spread a half inch or so under the trees, will have a wonderful effect. Indeed, we do not know but that for the pear tree a thin layer of road sand is one of the best of manures. We have seen apples thrive amazingly with a coating of coal ashes.

The gooseberry and currant also do well in partial shade. In fact, if you would have the gooseberry and currant in great perfection, get a lot of old brushwood and cover the rows closely, so that the plants will have to push through, and you will be astonished at the growth and healthfulness of the bushes. The decaying wood also furnishes an excellent manure for them. The finest currants ever grown can be had by mulching with old chestnut burrs, or even saw dust.

It has been noted that the grape vine thrives amazingly when it gets into an asparagus bed. These are generally elevated, and are thus dry, while the rich soil necessary for asparagus, is also good for grapes.

In planting fruit trees aim to have them so that the hot dry sun will not have full effect on the ground about the roots. The great heat in this way injures the trees. Many who have trees in gardens plant raspberries under them. The partial shade seems to be good for the raspberries, and helps the trees. Blackberries would no doubt do well in the same situation; and strawberries it is well known, do not do badly, grown in this way.

COMMUNICATIONS.

CELERY CULTURE.

BY A. D. MYLIUS, DETROIT, MICH.

I wish to endorse what Peter Henderson says in the January number about Celery sowing. At least one-third of the sowings of the 1st of March with me goes to seed. But still there is profit for me, at least, in the venture. I get more than double the price for this early celery than for that which I sow in April. But it must be understood that only a small lot is sown in a hotbed; for the call for celery comes only when the weather is getting cool. The advantage in early celery is that it is all sold in July, which gives time to plant a second crop of celery on the same ground. Celery pays me better than any crop I can raise on the same amount of land. My soil is just suited to this crop. I grow from 200,000 to 300,000 every year. Of course the price is generally but one-half that sold in New York city, being but 25 to 50 cents per dozen for extra good, and second quality 15 to 30 cents per dozen.

EXPERIENCE WITH PHYLLOXERA.

BY D. RHIND, GARDENER TO MR. F. F. THOMPSON, CANANDAIGUA, N. Y.

On the west shore of Canandaigua Lake, Vine Valley and Naples, are to be found extensive vineyards, where are grown hundreds of tons of grapes annually. On visiting the owner of one of these vineyards he was very anxious to show me what he supposed to be a new discovery. First he drew attention to an odd plant here and there among his Catawbas, the fruit of which was ripe, while the others were about three weeks backward. I suggested digging to see how the roots looked, which was done. We did not find any Phylloxera, as they had taken all the bark off and moved on, leaving the roots cankered, dead or dying. We then examined an older plantation of

Catawbas, on which the fruit was ripe also. This the owner attributed to the fact that he had let grass and weeds grow, instead of keeping the ground plowed and clean, as is the system generally. It was quite evident the vines were deteriorating rapidly; two-thirds of them were dead. We went to digging again, and sure enough there we found Phylloxera, giving its own color to the roots, it was so numerous. All we afterwards examined were more or less attacked. In going over a plantation set out last spring many were dead, most of them just alive. The ground was in good condition. I was asked what I thought was the matter. It seemed to me that the young plants got infected from pieces of roots from an old plantation which stood there lately, which would indicate that the ground would require a good rest before planting with vines again.

I have been greatly troubled with the Phylloxera on the foreign grape vines here in the houses, and must confess it has the best of me as yet. However, I have not lost hope; and if all who are fighting it would publish their efforts it might be conquered. I have tried hellebore dissolved in water, strong enough to kill earthworms; also salt of the same strength, and tobacco water made by steeping the stems, and using it as strong as is customary. All of these were applied at the rate of twenty gallons to the cubic yard. Holes were made a few inches apart, with a round stick to let it get down. The vines were not injured, but it did not kill or drive away the pest. Only one kind was used on a vine. I then tried crude petroleum, and it killed the vine. Well, I presume you would like to know what next. I took away the soil from the roots for some distance, gave them a good wetting, and sprinkled air-slacked lime and soot, equal parts, on and around them, and filled in with fresh soil. The vines made a good growth last summer, and had some fruit. Some of the bunches were seventeen inches long, and well proportioned. I was so well satisfied with the last experiment that I have treated another house the same way.

[In connection with these very timely suggestions of Mr. Rhind it may be as well to note that suctorial insects cannot be successfully destroyed by the poisons which destroy those feeding in the usual way. The potato beetle dies from Paris green, because it eats the poison with the leaves it feeds on; but we may cover an aphis with Paris green when feeding on a plant without doing the insect any injury, because it sucks the juice from the interior of the plant. Whatever is employed against the Phylloxera must be that which will destroy it in some other way.

It may also be noted that though the Phylloxera is a fearful scourge to the grape grower, it is often charged with trouble which properly belongs to fungus. During the last two years we have seen many cases where this mistake has been made. We have noted at least two distinct forms of fungus operating on grape vine roots, the effect of which in interfering with the healthy growth of the vine, is precisely the same as when it has been attacked by Phylloxera. In the one case the young growing fibres are attacked, usually in spots. Sometimes entirely girdling the young growth. The brownish and destroyed tissue can be seen with a good eye, or better, by a pocket lens.

The other fungus parasite covers the surface of the older as well as young roots with a blackish, warty excrescence. It is more often seen on vines one or two years transplanted, and in such cases the vines do not grow to any extent, and frequently dwindle away altogether.—Ed. G. M.]

THE CODLING MOTH.

BY CHAS. D. ZIMMERMAN, BUFFALO, N. Y.

In the July number of the MONTHLY, page 208, is an extract from the *Canadian Horticulturist*, referring to the codling moth, which says: "I set two traps on the 20th of last August, and caught over one thousand moths in one night. The trap is a glass lantern set in a tin pan of water, an inch or more deep."

It would be interesting to know if the moths caught were Carpocapsa pomonella. In my experience of several seasons' collecting, mostly in large orchards with both light and sugar, I have never seen C. pomonella at either. Nor have I ever seen one about my lamp at an open window, where apples and codling moths abounded in the near vicinity. The only instances in which C. pomonella appeared to be attracted by light, were on the inside of cellar windows, where they tried to make their escape to the open air.

In placing a lamp on one side of a breeding cage, in which a number of C. pomonella were confined, they invariably sought refuge on the opposite side, and often concealed themselves, while other species of moths would approach the light.

Many different forms of the trap (which, according to Downing, was first discovered by Victor Adouin, of France), are recommended by horticultural writers for the destruction of the codling moth, which, if my observations are correct, can-

not be captured in this way. The use of these traps may be recommended for the destruction of many other species of moths, and also for the Lachnostera (white grub beetles.)

The only practical methods of preventing or destroying C. pomonella are by the use of Paris green or paper bands.

CULTURE OF THE HARDY GRAPE.

BY JOHN WOODING, PENCAYD, PA.

It might be considered almost superfluous to say anything on this subject, as so much has been already said by others in articles and published in book form, giving the various opinions and differing methods of culture. This reminds me of a parson I once heard of, the rector of a small village in the old country, who had his sermons printed to last him, one for every Sunday in the year, and when he got through he started on the same batch again. So with grape culture, it will stand going over again. It would be impossible for me to enter into details on this subject here. I don't think it would be necessary even if I could, so I will be brief and sum it all up in a nutshell.

If good grapes are expected it is necessary they should have good material to grow them in. A prepared border should be made, excavated two and a half feet deep and four or five feet wide, with a layer of four or five inches of rough materials at bottom, such as brick bats, old mortar, oyster shells, &c., to act as a drainage. This is an important element in the matter, especially if the ground is heavy, in which case the border should be filled up with rotten sod and a good mixture of cow dung. Horse dung is not suitable for grape borders, as it contains too much fungus. Three-year-old vines should be selected for planting. Vines which have been grown in pots can be procured of any nurseryman in the neighborhood at a moderate charge. They should be planted about six feet apart, in a straight line up the middle of the border, and not allowed to bear fruit the first year. The second season they may be allowed to bear four or five bunches on each vine; and if everything goes well a good average crop may be expected the following year.

As to the management of vines I think pruning may be done any time, from first of January to middle of March. If this matter is delayed longer than the latter time they are apt to bleed too much, which is injurious to the vines, as grapes grow on the wood they make the current year. It is indispensably necessary that this growth should come from the preceding year's wood; hence the necessity of pruning down to within two or three eyes of the last season's growth. I find the system of pruning generally in vogue is to leave old canes year after year, until they have no good eyes or joints capable of producing fruit bearing wood, except a little growth at the extremities of the canes, which you have to depend on for your next year's fruit, and very poor stock at that. I think this system ought to be discouraged and instead young canes layered of the preceding year's growth in the spring, which when sufficiently strong and well rooted will take the place of the old cane which can be cut away.

In the process of growth and fruiting, if the latter comes too thick, the vines should be gone over and the bunches regulated out with the thumb and finger according to your own judgment and the strength of the vines. When the young shoots have made growth three joints from the fruit, one joint should be pinched off, leaving two from the bunch, thus giving a tendency to check the flow of sap, which is favorable to the fruiting. This operation will need repeating again during the season. Vine borders should be mulched at all times with about four or five inches of cow dung. A good sowing of bone dust in the fall of the year will be beneficial. Mulching protects the roots in winter, keeps them moist in summer, and acts as a stimulant to the vines. The coarse manure may be raked off in the spring and the rest lightly dug in with a fork and the border again mulched immediately.

DESTRUCTIVE INSECTS.

BY WALTER ELDER.

There are four specially destructive I have noticed within a few years back, and as I have prevented their ravages I will relate my experience for the benefit of others. The first is a smooth, pale-green worm, an inch and a half long, which I first found feeding upon the leaves of Mignonette and Sweet Alyssum, in small numbers. The hue depends somewhat on the color of the leaves it feeds upon. Another has destroyed thousands of acres of the late cabbage crop. Three years ago last fall I found the worms in vast numbers upon my cabbage plants. I syringed a portion with a strong solution of carbolic acid soap, with flowers of sulphur in it, and on the other portion dusted air-slacked lime. All the worms were killed.

One season I dosed the cabbages before the time for the appearance of the worms, and the

plants were untouched by the pest that year. So by taking time by the forelock, I learned that "prevention is better than cure." The worms come in August; apply the cures early in that month. Last year I syringed with carbolic soap, with Paris green in it. All the worms were killed, and no second brood followed. [Dangerous.—Ed. G. M.]

There is another worm which feeds upon the leaves of the quince, and still another, found upon the hop vine, both of which can be stopped from coming by syringing the leaves with the aforesaid mixture.

VEGETABLES.

BY ISAAC HICKS, OLD WESTBURY, L. I., N. Y.

I want no more of the Acme tomato; they rot badly. Tielden and Trophy are good for all seasons. I have a nice lot of the Perfect Gem squash. They are small but prolific and the best I have had, keeping good thus far.

For the first crop of peas I wait for the little Gem. They are so much better that one can afford to wait for them. At the same time plant Alpha and Champion. After these are up nicely, plant another row of Champions for later. Our most successful asparagus raisers for market plant much wider apart than formerly. To obtain the superior Oyster Bay asparagus, 3½ to 4 feet between the rows, and 16 or more apart on the rows. Then throw on the manure liberally and the growth will be true Colossal, equal to Conover's. What do we hear about the Japan Chestnut? Who has them to bear? Are they hardy? The tips of those we have were killed last winter, and a very mild one, too. Further south probably they will succeed finely and if all that is claimed is true, they will be an acquisition indeed, even more so than the persimmon.

EDITORIAL NOTES.

CULTURE OF FRUIT TREES.—The *Country Gentleman* advises to try good and poor cultivation on alternate trees in long rows, so as to make a satisfactory test as to the best methods of treatment. Would it not be better to decide first what is good and poor cultivation? In an essay on the "Cultivation of Orchards," now before us, the author says: "I would recommend every one to prune whenever he finds his knife sharp," and still another, who says: "I would not on any account prune an orchard tree. The necessity for knife pruning is in itself an evidence of bad culture."

FARMING IN NEW ENGLAND.—Mr. J. W. Cheever—excellent authority—in a report to the State Board of Agriculture of Massachusetts, says: "What New England soil most needs is men who have faith to cultivate it; and there is plenty of evidence that such men are becoming more numerous, and that the number will increase, as agricultural knowledge increases, until New England shall be noted, not only for being the birthplace of great and good men, but also the home of those whose love is too strong to forsake her."

THE JAPAN PERSIMMON.—Last fall Mr. Nelson, gardener to Mrs. Chandler, in Germantown, Philadelphia, fruited and exhibited before the Germantown Horticultural Society noble specimens of the Japan Persimmon. They were like small oranges rather than specimens of the ordinary native fruit. This plant was a small one, left behind by the Japanese after the Centennial International Exhibition in 1876, and planted in Mrs. Chandler's garden, which is much sheltered, as most city lots are. During the winter of 1880–81 it froze to the ground, but sprouted up strongly from the roots the next summer. During the winter of 1881–82 it was protected by boards on two sides, the boards facing northeast and northwest. It went through the comparatively mild winter without injury, and this summer made a bush of about six feet high, and was loaded with fruit. Mr. Nelson says there was much difference in the size of the fruit on the bush. Some were no larger than marbles, though many were of the huge size as those exhibited.

THE ADVANTAGE OF BRINGING PEACHES EARLY TO MARKET.—During an address to the North Texas Horticultural Society, Mr. H. Tone said that "the man who brings the first peaches to market sells them readily for $4. The next day he comes with five bushels and grumbles because he is obliged to sell them at $2.50. On the third day he comes with twenty-five bushels, and finds his neighbors in with as many more, and every man of them considers it downright robbery when he is offered the standard price of a dollar and a half, when the fact is that peaches, even at fifty cents a bushel, make double the profit of any crop of cotton, corn or wheat that can be raised."

RED-LEAVED ENDIVE.—A red leaved endive is announced by the Italian seed merchants. As the common endive, besides its use as a salad, is used to ornament dishes before it is eaten, a red leaved form will be very desirable.

SUGAR IN AMERICA.—The *Boston Journal* thinks it useless, after so many years, trying to

protect the effort to make sugar in America. Mr. J. J. Gregory, of Marblehead, takes up the *Journal*, and shows that there has been remarkable progress of late years, and the *American Agriculturist* gives the following figures in support of this position:

"The fact is well established that some varieties, especially the "Amber" and the "Orange," will yield a large amount of crystallizable cane sugar, and that the cane contains the largest percentage of sugar at the time the seeds are ripe. It is found that after the cane is cut, the cane sugar in the juice rapidly changes to grape sugar, and that the cane should be worked up within a few hours after cutting it. The making of sugar, on account of the expense of machinery and the skilled labor required, cannot be profitably followed by individuals. There needs to be co-operation among farmers to establish and operate sugar works on the same plan that cheese factories are carried on, or they may agree to cultivate a certain number of acres in cane, provided capitalists will establish factories to work it up. In several Western States companies have erected factories and cultivated their own cane on a large scale. These have generally been reported as financially successful."

GOOD POTATOES.—Referring to potatoes, Mr. Benj. P. Ware, in a recent address before the Massachusetts Horticultural Society, remarked: "As to potatoes, since the Early Rose was raised and sold for three dollars a pound, and a cow given for a single tuber, farmers have seemed to be crazed on the subject, and we have been flooded with new varieties, many of which are seedlings from the Early Rose, and some of them are better. Burbank's Seedling is a better cropper, keeps well and is white and of excellent quality. The Early Ohio is earlier than the Early Rose and has the requisites of a first-class variety. Goodrich's Seedling originated near Haverhill, and received a prize offered by the Essex Agricultural Society for the best seedling potato. It is a strong grower, keeps well and is a firm variety. Clark's No. 1 is excellent. The Bell is probably the best new variety; several persons who have tested it in competition with twenty others claim for it better qualities than are possessed by any other; it is very productive and remarkable for its uniform size; of pinkish color."

GREEN CORN.—Mr. B. P. Ware believes that the early varieties formerly raised were not sweet, but now we can have sweet corn from the earliest ripening to frost. The Marblehead is earlier than any other—even the Narragansett or Minnesota. The stalks are small and the ears are produced near the ground. Mr. Ware recommended to plant three or four varieties, which would become fit to use in succession, and in this way two plantings would be enough. Next after the Marblehead comes Crosby's Early, then Moore's Early, and for a late variety either the Marblehead Mammoth, the Burr's Improved, or Stowell's Evergreen.

SQUASHES.—At the December meeting of the Mass. Horticultural Society, Mr. B. P. Ware, told what he knew of squashes, naming first the Butman, of American origin, a beautiful variety, with fine colored flesh and excellent quality, a good keeper, and showing handsomely at fairs; very desirable for amateurs, but not sufficiently productive for a farm crop. The Marblehead squash, Mr. Ware thought a sub-variety of the Hubbard, obtained by selection. It generally commands a higher price than the Hubbard, but does not crop so well. It is very similar to the Butman, and, like that, desirable for amateurs. The Essex hybrid was raised by Aaron Low, of Essex, by crossing the Turban and Hubbard, and is a very remarkable variety, uniting the form and fine quality of the Turban with the hard shell and keeping properties of the Hubbard. It is a very rapid grower, so that it may be planted as late as the 4th of July, or in connection with a potato crop, every fourth potato row being left vacant and afterwards planted with squashes. When planted late, it avoids the maggot, the worst enemy of the squash, which has probably deposited its eggs elsewhere before this variety is ready. The American improved Turban is the best early variety, not excepting the Marrow.

ONIONS AND CELERY.—"Chronicler," in some notes recently received from him, refers to the usefulness of the essays on the culture of onions and celery recently published by D. Landreth & Sons. The essays, he says, are complete guides to culture, giving facts as to growth and profit. He predicts that before many years pass by Northern growers will find much profit in the exportation of these vegetables to our Southern States and to the tropics.

SCRAPS AND QUERIES.

CAMPBELL PLUM.—Mr. L. B. Case remarks: "I am anxious to see a point more thoroughly made known to the horticultural world in regard to the Campbell Plum, page 49, GARDENERS' MONTHLY, but of course that can only be satisfactorily obtained next summer when the tree is in foliage, flower and fruit. So please keep an eye on your

Virginia correspondent for the information. I anticipate in the near future an entire change in many forms of our choicest fruits, and perhaps the plum will lead in the change, for it is certainly among our choicest fruit and now seems to receive a special attention from many of our leading horticulturists."

IMPROVED PERSIMMONS.—Mr. L. B. Case, referring to this fruit says: "Undoubtedly we shall, at no very distant day, secure choice and serviceable forms of our native persimmon, worthy a place in every fruit garden."

BUDDED APPLE STOCKS.—William Bustrin, Dallas, Texas, says: "Referring to the subject of growing apple trees from buds, I would like to say something of my experience in Texas. Small seedlings set out in spring, and budded in June, made excellent trees by fall. Parties to whom I sent these trees reported them the best they had got from any one for many years."

KIEFFER'S HYBRID PEAR.—Mr. Edwin Satterthwaite said at the recent meeting of the State Horticultural Association at Harrisburg, January 16th, 1883: "I have fruited the Kieffer three years, and had last year more than one hundred bushels of the fruit, of uniform large size and as perfect in shape as if made in a mould, and all ripening of a rich golden yellow color, quite a number with a beautiful red cheek, keeping for weeks after coloring and when perfectly ripe of uniform good quality. It must be borne in mind that this pear is not fit to eat until perfectly ripe and soft, which it commonly is not until long after it begins to color."

FORESTRY.

EDITORIAL NOTES.

PRACTICAL FORESTRY.—There is an immense amount of practical knowledge yet to be evolved before forestry culture can be made a great success in our country; but the rapidity with which Americans learn when they set themselves seriously about learning, will enable them to plant and manage forests with tolerable success whenever forest planting shall become an everyday business. Even in the old world, where they have had ages of inducement in forestry planting, they still find they have neglected to work out many valuable problems. For instance, the French arboricultural journals are now discussing whether it is best to set out one year old plants when a forest is to be founded, or whether it would be better to take plants several years old. Now at first thought, the usual forestry essay writer for the newspaper would say at once, take the young seedlings, by all means. They are cheaper; they take less handling; they are planted more rapidly; they are more certain to grow; and they recover from the check of transplanting in a much shorter time than larger trees. But on the other side are some considerations seldom thought of. In the case of small trees, many more are planted than are necessary to form a permanent forest, because young trees need the protection of one another against wind and weather in infancy, and there has to be the labor of thinning after the young trees have grown. Then it is found best—nay, almost essential to profitable forestry—that the forest of young trees to grow rapidly into profit, must be as well cultivated as crops of corn, and thus we have four or five years of hard work in the case of the seedling plant. Now plants for a forest of a thousand acres, sown thinly in a nursery plot, may be grown on a half acre for five years at a comparatively low cost. They need not die in transplanting more than one year old, if the planter understands his business, and there need not be more than one year's difference in the result of check to growth from the larger size. There is no doubt but in these five-year old seedlings there would be four years gained in interest on ground and labor expenses, with no necessity for the cost of labor in thinning as in the other case, as they could be set just where they are to remain.

As we have said, it is an unsettled question in Europe, and they are doing there just what we are often apt to do, writing about it with hours on hours of labor on each other's opinions, but so far as we see, no one attempting to solve the matter by figures. It really looks as if the larger tree

notion might carry the day if the two plans were fairly tried side by side with each other.

But the whole matter shows how much there is to learn before forestry planting will yield all the rapid profit it is capable of doing.

PINES OF MOUNT DESERT ISLAND.—A lady kindly sends us cones of the pines growing in that part of the country. They prove to be the common white pine, and the "yellow" or "spruce" pine, Pinus mitis.

THE "HARDY" CATALPA.—We have often objected to this name, because it implies that the Eastern species is "tender," while everybody knows that there are large timber trees in the East over a hundred years old, many of which must often have experienced a temperature of perhaps 20° or 30° below zero. Whenever we have suggested this, the answer has been that the Eastern Catalpa dies back when young, or loses its leader and hence is apt to make a more or less crooked trunk, and that the Western one never does. This has been one of its leading recommendations. We have had some doubt about this difference to any material extent, but have had to take the positive statements as they have been given us. Mr. H. C. Raymond, of Council Bluffs, Iowa, now writes to the *Iowa Homestead* that in the north half of the State the young trees will be often killed back but will recover and increase in hardiness with age.

This is precisely the character of the Eastern form. We are inclined to the opinion expressed in the beginning of the Catalpa enthusiasm, that while there is no doubt of the essential distinctness of the two species for forestry purposes, planters will not go far wrong in having a valuable timber tree, by selecting either one. Its value is chiefly in timber for posts and railroad ties; but planters should remember that the future of forestry will require other species of wood as well as Catalpa wood.

A PUBLIC FOREST IN THE STATE OF NEW YORK.—Senator Frederick Lansing's bill forbidding the sale of 660,000 acres owned by the State in the Adirondack region, was passed by a vote of 24 to 5, January 23d. It is a good indication of increasing public appreciation of the need of preserving the wooded character of that part of the State. The timber there, if cut at all, should be cut only under rigid control, and with the most careful provisions for immediate rewooding of the cleared ground. So well says one of our exchanges.

MORUS MULTICAULIS.—This large, broad-leaved variety of the Morus alba was introduced by Perottet from the Philippine Islands to France in 1824. It was soon after introduced into the United States and used largely in the early experiments with silk culture. In consequence of disease it has almost disappeared from cultivation. One of the last to survive was on the ground of Mr. Samuel Chew, on the old battle ground of Germantown, but it has recently been cut down. It had become a very large tree.

AMOUNT OF TANNIN IN THE BARK OF SOME OF THE TREES IN THE UNITED STATES.—United States Forestry Bulletin, No. 24, C. S. Sargent, Special Agent in charge, gives the following:

BOTANICAL NAME.	COMMON NAME.	REGION.	Percentage of Tannin.	Percentage of Ash.
Gordonia Lasianthus	Loblolly Bay, Red Bay	Southern Atlantic	13.14	2.35
Prosopis juliflora	Mesquit, Algaroba	Mexican Boundary	4.04	8.71
Rhizophora mangle	Mangrove	Gulf Coast	31.04	6.70
Exostemma Caribæum		Semi-tropical Florida	5.81	7.16
Quercus alba	White Oak	Atlantic	5.99	6.11
macrocarpa	Burr Oak, White Oak	"	4.50	8.05
Prinus	Chestnut Oak	Southern Atlantic	6.25	3.83
Muhlenbergii, old tree	Chestnut Oak, Yellow Oak	Atlantic	4 33	8.38
Muhlenbergii, young tree	" "	"	10.33	6.23
virens	Live Oak	Southern Atlantic	10.46	8.89
Emoryi	Black Oak	Mexican Boundary	9.76	15.09
rubra	Red Oak	Atlantic	4.56	4.48
tinctoria	Black Oak, Quercitron Oak	"	5.90	5.73
Kelloggii	Black Oak	Pacific Coast	6.76	8.64
falcata	Spanish Oak	Southern Atlantic	8.50	4.32
nigra	Black Jack, Barren Oak	Atlantic	4.36	6.28
densiflora	Tanbark Oak, Chestnut Oak	Pacific Coast	16.46	3.84
Castanea vulgaris, var. Americana	Chestnut	Atlantic	6.25	2.00
Picea nigra	Black Spruce, Red Spruce	Northern Atlantic	7.20	2.84
Engelmanni		Interior Pacific	20.56	2.75
Engelmanni		" "	17.01	2.32
Engelmanni		" "	12.60	0.75
Tsuga Canadensis	Hemlock	Northern Atlantic	13.11	1.31
Mertensiana	"	Northern Pacific	14.42	1.44
Mertensiana	"	" "	15.87	1.49
Pattoniana	"	" "	15.72	2.48
Pseudotsuga Douglasii	Red Fir, Yellow Fir	Pacific	18.79	1.56

Natural History and Science.

COMMUNICATIONS.

ON THE FERTILIZATION OF WHEAT.

BY MR. A. VEITCH, NEW HAVEN, CONN.

I have no reason to doubt the correctness of Mr. Carman's statement that in his experiments with wheat some of the offspring differed slightly from the parents. But it is an open question whether those differences were due to the means he employed or to the inherent tendency of this plant to vary, without the aid of cross-fertilization. It is admitted that crossing cannot be accomplished through natural agencies, and if so one of two things must be true, either the earliest inhabitants of the globe understood cross-fertilization as practiced by Mr. C., or all the varieties known until a recent period were the result of cultivation, pure and simple. We cannot believe that the first method was known at an early date, otherwise the ancients do not receive as much credit from the moderns as they deserve. And we are assured that in the wheat plant varieties have been obtained without the aid of artificial crossing.

No better illustration can be given of this variable tendency than is presented by the experiments of M. Fabre, of France, on Ægilops ovata, an annual grass common in the south of Europe, and still used as an article of food by the poorer classes of Sicily. In 1838, M. Fabre sowed the seed of this grass, and continued the process for eight years in succession, at the end of which time he obtained a fair sample of wheat. This was disputed at the time and caused quite a controversy, the substance of which was published in the London *Gardener's Chronicle*, in the year 1846 or 1847. A similar series of experiments was conducted by Prof. Buckman, of England, between the years 1855 and 1859, which resulted in confirming M. Fabre's reports in every particular. In the latter case modification took place by the disappearance of the awns of the palets and the shortening of those which spring from the lateral ribs of the glumes; the ears at the same time losing their fragility, and the increase of the grain in size, &c.

Whilst these experiments were in progress, considerable variation would no doubt be observed in the annual crops, and we cannot suppose that in either case a point was reached beyond which no further change could take place. Varieties so obtained may possess characters that are comparatively stable, but secondary traits such as color and size of grain, large or small ears, earliness or latenesss, weight of straw, &c., might all occur through diversity of soil, climate, &c., and these we claim to be the chief agents in producing the different varieties of wheat. There is nothing in this but that might be accomplished by an unintelligent people impelled by the pressing law of necessity, acting upon their natural instincts and sagacity.

Whether Ægilops ovata is to be regarded as the prototype of the varieties of wheat in cultivation has not yet been determined, but from the glimpes we obtain of its use by the earliest settlers of Europe, it undoubtedly has played an important part in this connection. We know that before history began to be written, and whilst the Europeans made war upon each other and the brute creation, with weapons made of stone and bone, Ægilops was not unknown to them as an article of food. For in the lake dwellings of Switzerland it has been found associated with the relics of that primitive people in such a state of preservation as to leave no room to doubt its relationship with wheat.

In all the accounts which have come under our notice in reference to the amelioration of this grain, no mention is made of crossing having been resorted to as a means to that end. Perhaps there is not now a true hybrid in cultivation. If there is, how, where and from what species obtained? It is true Mr. Carman tells us he has crossed wheats hundreds of times, and Mr. Beaton as unequivocally asserts that to do so is impossible. When statements are so opposite a fallacy must lurk somewhere, and all we are after is to know the facts of the case. As Mr. Beaton was a close observer and painstaking experimentalist, I have hitherto placed much confidence in his statements, and chiefly because they are in harmony with my own observations on related cleistogamous plants. It would seem that there is something in the economy of such plants that requires concealment, but

if by such handling as has been described, nature can be made to swerve from the ordinary course by the invasion of her private compartments while performing special work; and if Mr. C. has been successful in getting in advance of the normal process of fertilization in his experiments, nothing remains for us but to accept his conclusions, however opposed they may be to preconceived opinions.

THE HABITATS OF PLANTS.

BY W. F. BASSETT, HAMMONTON, N. J.

The adaptation of plants to different climates is an interesting subject for observation, and some curious facts are brought to light in botanizing in different sections.

Some plants seem to do equally well in similar soils without much regard to temperature or humidity. Gerardia quercifolia and pedicularis and Lupinus perennis are examples of this class, growing in light soils both North and South. On the other hand, Trientalis Americana and Medeola Virginica, which are common in rich woodlands in Massachusetts, are only found in low peaty lands here in New Jersey, and Aspidium thelypteris and Onoclea sensibilis, found only in swamps here, grow everywhere by the roadside and in pasture there, and still more notably, Arisæma triphyllum, which at the North is freely distributed in rich woodlands everywhere and sometimes remains in grass fields, is only found in the wettest swamps here, growing directly out of the water. But perhaps the most singular fact connected with this plant is that the acrid taste, which is not only characteristic at the North, but so decided that no one who ever tasted will forget it, is absent in our specimens, and the bulbs can be eaten with impunity.

Curiously enough, we find Epigæa repens in great abundance near the top of Hoosac Mountain, growing in cold, damp soil, and exposed to the raking west winds, while here it is equally abundant in our dry, sandy, half-open woodlands, more or less exposed to the scorching summer sunshine of such localities; Cypripedium acaule, also—which is abundant everywhere here, growing on our lightest soils. At the North we only found it in damp forests where beech and spruce formed a considerable portion of the timber. We should hardly expect to find plants peculiar to rich woodlands in the North growing on the sea beach here, but there is a place in Atlantic City called Hill's Creek, where we find several of them apparently at home.

In this place the Myricas and other shrubs have so stopped the drift as to form a line of low sand-hills around a few acres of half-marshy land, only leaving an open side not much exposed to wind, and with a narrow belt or border gently sloping from the sand-hills to the marsh, sheltered from the hot sun by a low and spreading growth of red cedars, holly, &c., and here in the mixture of sand and leaf mould we find Geranium Robertianum, Trientalis Americana and Mitchella repens in abundance, and a few plants of Aquilegia Canadensis, which we have never seen elsewhere on the yellow drift or sand barrens. We also find Asplenium ebeneum and Arenaria lateriflora, which is, according to Gray, a New England plant.

EDITORIAL NOTES.

THE FORKING OF FERNS.—Botanical periodicals often have notes from correspondents about the forking of fronds in ferns, a feature not found in the normal condition. There are very few species which do not at some time or another give illustrations of their power to fork; but so far as we know, no attempt has been made to show under what morphological law these departures are brought about. Horticulturists, however, have rendered botanical science great service by showing that these singular variations in ferns can be reproduced by spores.

A number of crested or divided forms of ferns are under culture, and one at least, Nephrodium molle, gives its crested form in great numbers from spores. It is not so very long ago that people were discussing how to distinguish a species from a mere variety, and the power of reproduction from seed or spores would then have been denied to a mere variation. Now we find that every variation comes under the laws of heredity, and the fact has been of great value to those who believe that species have been evolved from some prior form. A variety is in fact but an incipient species.

Aside from the botanical interest of these departures from the normal condition, many of them are of great beauty and horticultural value. Here is a crested form of Lastrea Richardii, introduced by Messrs. Veitch, of Chelsea, near London, who give the following account of it:

"A beautiful crested Fern for warm conservatory and intermediate house, sent to us by Charles Moore, Esq., of the Botanic Garden, Sydney, N. S. W.

"Mr. Thomas Moore, the eminent authority on

Ferns, in his notice of this new variety in the *Gardener's Chronicle* for January 22, 1881, writes:

Lastrea Richardii multifida.

'The typical form of this fern is a New Caledonian plant. In the variety now under notice, which is one of the handsomest of all known ferns, the fronds differ in having their apex and the apices of the pinnæ multifidly cut into numerous narrow-pointed, spreading, finger-like lobes. The

plant has fronds three feet high, including the stipes, which are a foot long, numerously developed from a short decumbent caudex. The pinnæ are upwards of 4 inches long in the broadest part, and terminate in a densely fingered tuft of about fifty long, narrow, acute divisions, the apex of the frond dividing into two or more branches consisting of about seventy of these small finger-like segments. Its bright green color, its small pinnules, and the bold crested apices with their numerous narrow divisions, give this plant a singularly elegant character, and mark it out as a very ornamental useful fern for the decoration of the hothouse.'"

BOWIEA VOLUBILIS.—Some years ago our friends of the Cambridge Botanic Garden, gave the editor a specimen of this singular plant, which he keeps and treasures not only for its graceful character as a garden ornament, but also for its botanical contrasts with its near neighbors, the asparagus and similar plants. The common asparagus would be regarded as a beautiful garden ornament if it

Bowiea volubilis.

were not so common as a vegetable. Its foliage is surely graceful, and its red berries in autumn are equal to the holly in rich beauty.

This plant, Bowiea volubilis, has dry seed vessels, devoid of color, and the foliage is not as fine or feathery as the asparagus, but its twining habit gives it some advantages over its kitchen garden relative. The root is not fibrous as in asparagus, but round like an onion, though as solid as a gladiolus. If it could be made to grow in the winter season, as another neighbor, the "Smilax," or Myrsiphyllum does, it would be very valuable to cut flower people. But in the writer's experience it dies down in autumn, and positively refuses to push up in the winter. Messrs. Haage & Schmidt, of Erfurt, have recently introduced it to commerce.

DURAND'S OAK.—This species, named by Prof. Buckley for the late Elias Durand, of Philadelphia, has recently been re-discovered by Mr. Ch. Mohr in Alabama. It is now regarded as a good species.

REMARKABLE DISCOVERY IN TEXTILE FIBRES.—Cotton is the only vegetable product which yields an ultimate fibre which can be spun directly without further process. The fibre of hemp, flax and other plants is compound. Ekman has discovered and patented a process by which these compound fibres can be cheaply reduced to ultimate ones. The effect of this discovery on cotton culture is looked forward to with much interest.

KALMIA AND SHEEP.—Dr. Thomas F. Wood, the distinguished physician of Wilmington, North Carolina, tried to kill a young sheep by feeding it Kalmia angustifolia, but failed. It would not eat it, though hunger was an aid to the effort. Then a decoction of the leaves and fruit was forced down its throat, but it vomited, and more and stronger was given to it. After several days of desperate illness, persistent vomiting, &c., it finally recovered. The doctor believes, from his observations on the case, that, though the shrub is a gastric irritant, and has some intoxicating properties, it would be difficult for a sheep to eat enough of it to cause death. On the whole, a morbid appetite might induce a sheep to eat a great deal of it, and thus cause death, which, however, he thinks, must be rare. The paper is in the February number of the *American Agriculturist*.

SCRAPS AND QUERIES.

THE SEASONS IN ITALY.—A correspondent at Venice says: "Wheat can be ripened with us by the end of June, but in Europe it does not as a general thing ripen before the month of August, and in some parts not before September."

THE AMERICAN CRAB APPLE.—J. A. C., Dayton, Ohio, writes: "Will you kindly tell me, as well as other readers, through the columns of the GARDENERS' MONTHLY, what are the particular distinctive characters that separate the native American crab apple from the original form of the cultivated apple, or in fact, from all other species of

the apple? I do not know where to obtain the desired information from books and must ask of those who have made fruit a study. Who originated the Hewes' Virginia crab apple, and would it prove perfectly hardy here? Is there any other cultivated apple of native American origin or with part native crab parentage in cultivation? If so, should be glad to know the address of those who have them."

[Pyrus coronaria, the native American crab apple, differs from Pyrus malus, the cultivated species in many botanical characters, among which are that the leaves are often slightly lobed, as in some hawthorns, the veins are straight and the petioles very slender. The old world species never has any tendency to be lobed, has the leaves thick, the petiole stout and the veins incurved. In the American the petals are long clawed, and they are short clawed in the European. There are other minor differences recognized by botanists. It can be popularly distinguished by the delicious odor of the fruit, which has obtained for the species the common name of "sweet scented crab."

So far as we know it has never been improved, though it well deserves a trial in that line. Hewes' Virginia Crab, is but a small variety of the old world species, at least this is our belief without any specimen before us. If it be of the American species the fact would most probably have suggested itself to the writer in former examinations. By the way, who was Hewes? Where did he find this crab? Such a magnificent cider apple deserves a niche in special history.—Ed. G. M.]

VARIOUS INQUIRIES.—"Chautauqua," Proctor, N. Y., says: "Is the grapevine cleistogamous: *i. e.*, is the stigma fertilized by its own pollen before the cap falls off?

Volume 23, page 308, Berckman's grape; does it ripen in July and is it anywhere for sale? I am unable to find it in a catalogue.

Volume 23, page 205, cheap boiler, water backs. No hardware store in Buffalo knows what it is. Do you know where and who manufactures it?

Volume 24, page 178, Strong's method of grafting. What is it?

I will look under the *nom de plume* "Chautauqua" in GARDENERS' MONTHLY for an answer."

[Cleistogamous, as generally understood by those who use the term, would hardly be applied to the grape vine. The violet has two distinct kinds of flowers, one as we generally know them, with colored petals, the other without petals, and which in fact never open their buds at all, but mature seed without opening. These are properly cleistogamous flowers in the purely botanical sense. In the grape vine the corolla remains over the pistil in such a manner as to favor the reception of its own pollen. It is not adapted to cross-fertilization, unless the operator removes the corolla and applies the pollen before its own has had a chance to reach the stigma. It might be called a self-fertilizer and not cleistogamous, though the results are much the same.

The Berckmans could probably be had of those who secured Dr. Wylie's hybrids. Probably Mr. Berckmans could tell.

"Water backs" is a common term in this part of the world in connection with ordinary kitchen ranges or stoves. It is a small boiler at the back of the range which furnishes warm water for kitchen or household uses. What do they call them in Buffalo?

Mr. Woodbridge Strong's method of grafting is simply to cut or chop a gash in the side of the branch, cut the scion wedge-fashion, and stick it in. It is among the most valuable facts ever given the readers of the GARDENERS' MONTHLY.—Ed. G. M.]

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

LETTER FROM ITALY.

BY S. M.; BELLAGIO, LAKE OF COMO, ITALY.

Being here in Italy for the last five months, I reproach myself for not offering, as far as my abilities go, a few remarks of interest to your readers concerning this country, in return for the many hours of instruction and interest which I have received from the GARDENERS' MONTHLY for the last twenty years. I shall begin with a comparison of our country with Italy, and will state at once that the main point of similarity is the warm summer, and the main point of dissimilarity is the winter,

which is harsh to severe from Delaware to Maine, and is, here, without frost or ice, except among the Alps. Nature has indeed lavished on our country her treasures of fertile soils and of minerals, but she has given us also a hard winter, limiting our productions, and giving us the task to provide for innumerable wants unknown in milder climates.

Hence we cannot grow the lemon and the orange except in parts of Florida and California, and even there get them destroyed by frosts that will happen, say once in a decennium. It is true our oranges are of a good kind, but the best of our trees will not yield anything like the Italian trees. In Sicily a good orange tree in bearing yields on the average five thousand oranges a year, a good lemon tree ten thousand lemons a year, the fruit coming along mostly all the year through, and, of course, equally so the blossoms. Competition is therefore out of the question, just as little as we shall ever be able to compete for sugar with the West Indies, where the cane is perennial, while it has to be replanted every three years in Louisiana.

Now the lemon, the orange and the olive are rich sources of income in Italy, and none of them require any particular care—the olive hardly any. The olive tree grows freely all over the country, except on the Alps; the lemon and orange trees grow freely and abundantly in the southern half, and with nursing and in sheltered positions, also in some portions of the northern half of this country. Next in point of importance here is the vine, and, in one sense, the whole country may be called one vast vineyard, for the rocks and the hills and the mountains are terraced and walled and cultivated by the hand of man to produce the grape. At a distance, you would think those heights were inaccessible, except to goats, and worthless, except for timber. You get near them, and you find that wherever a man could find a place to put his foot down and not fall off, there he has planted a vine.

The wine is of a quality which cannot compare with French wine as to flavor or taste, and hence is not exported. There has been for the last two years, a good demand for it from France, but that was owing to the failure there, and only for the manufacture of and mixing with French wine. Otherwise it is all drunk on the premises, that is, consumed in Italy. Your readers must know that water is considered here a blessing of heaven as an article to wash with, or for navigation, or for driving a mill, but nobody thinks it is made for drinking. The same notion prevails in France. This explains the enormous quantities of wine required. On the other hand there is never—"hardly ever"—any drunkenness or intemperance. During five months' stay in Italy I have seen but two individuals the worse for drink.

Now we in America can certainly raise grapes which will make good drinkable wine. The grapes though, which we have raised heretofore, do not make a desirable kind. Those of Ohio are unreliable, and one year's wine does not in the least resemble last year's or next year's, nor is it drinkable, except the quality happens to be unusually good. Again, the California wines are much too heavy and heady to be fit for daily use. But then we have such variety of soil, that, with care and study, we would surely produce the right article. But would it be wanted, when produced? Who can and will give our people the taste for it, and thus redeem them from the curse of whisky and from the stupefying beer?

Pardon the digression, and I proceed.

Some other fruits are grown here which we have not, at least not in perceptible quantities. There are, for instance, figs enough raised here to exclude any importation of them, and to make them a common fruit for dessert, both fresh and dry. Likewise the Japan medlar, and the apricot, and divers kinds of plums, none of which, I believe grow with us at all, but are here quite common. Nor have we the fruit of the stone pine, which, however, to my taste, is nothing to deplore. I could go without them all the rest of my days, as well as without the artichoke, which is served up here the greater part of the year.

But whilst we have not a good many of the Italian fruits and vegetables, Italy has most of ours, and of tolerable quality, too, and in abundance. She likewise grows all our cereals, Indian corn included, which goes here by the name of Turkish grain; also hemp, flax, rice sufficient for her own consumption, and, on her mountains raises a great many head of cattle—enough to enable her to export a good many millions of dollars' worth of them, every year, to her neighbors, France and Switzerland.

Coming, however, down to the lowlands and plains, the absence of good grass is very striking. It does not seem, though, to affect agriculture, since cattle, sheep and horses look, as a general thing, in good enough condition. But the horticultural eye, and the eye for beauty, miss the grass sorely. And this brings me right into your particular department. The Italian taste for gardening is not ours, nor that of the English or Germans. Theirs is the architectonic style, handed down to them from their predecessors of the land,

the Romans. And proof positive it is, that, spite of Virgil's charming Georgics, spite 'of Horace's coquetting with the country, the Romans had no taste for it. Nor have the present Italians. Their gardens and villas are for show, not for that enjoyment which our gardens give us in the way of peaceful emotion, of pleasant occupation, of communing with our "Mother Earth," of greater nearness to God the Creator. Now trees and grass, the alternation, in other words, of light and shade, and also the mixing and blending thereof, promote these pure feelings, and are the delight of our Northern eyes and hearts.

Moreover, the Americans have the high privilege over the nations of Europe, that we still have nature about us in untutored woods. Such are hard to find in Europe. Forestry is an art there, and means the cultivation, conservation and general management of trees. They get all that, it is true, and, like a well-dressed, respectable gentleman, they are a virtuous sight. But the originality of nature, the individuality, the poetry are mostly gone or out of sight. As yet, I say, as yet we have the woods, the forests, the native growth, the underbrush and all in our American country, but it won't take another hundred years, and we may be worse off than Europe. We may not have their forests, swept and trimmed and well ordered though they be; we may possibly have next to none at all, if we continue going on the principle of not caring who takes the hindmost.

Root out of your mind, American stranger in Europe, your sweet memories of woods and grass, and let us look round in Italy where so much is to be enjoyed nevertheless.

Small as this country is, we can enjoy the greatest diversity of climate, consequently also of productions, mode of life, etc. First, as to the northern half, all north of Rome. Hill, dale, valley, pasture land, ice-clad mountains, rivers, lakes, swamps and plains alternate. The most remarkable feature is, that from the cold mountains you can descend into the subtropical "Riviera," or the north shore of the Mediterranean where, although you have right behind you the relatively cool districts of Piedmont and France, as far as the coast itself is concerned, you enjoy a climate similar to that of Naples. There you see in the month of March hedges, garden hedges, of roses, of fine kinds of roses, such as we are proud of having in beds and pots, rank of growth; ditto of oleander, lemon and orange trees in the open; fuchsias, geraniums and many similar things of a height, strength, nay, robustness, that make you look twice at them before you will believe it. In the same way, you see other acquaintances and old friends in a new condition. Very many of the plants and small trees of our green and warmhouses, reared and kept there like fine ladies in their parlors, here appear, like everyday folk, in the gardens of Nizza, San Carlo, Genoa, etc., and, like everyday folk, are all the stronger for it.

Magnolias also abound on this "riviera" and here, as well as throughout Italy, keep their leaves all the year round. Palms will also flourish in a good many spots, but the date palm will not ripen its fruit, and, on the whole, the palms do not look "to the manor born" with the exception of one spot.

That spot is the garden of the gaming-house of San Carlo. Partly the favorable situation, but mostly the immense care and lavish expenditure of Monsieur Blanc, the lessee, have produced this spot and made it an ideal one. People call it Paradise for short. Here the flowers, plants and trees of all zones are made to look at home. By the way "Paradise" is no inapt name. The gambling saloon is in the centre of this garden. Here is the fall of man, and penitent is he driven hence by remorse.

But we must not linger on the seashore, however attractive, both as to color of the water, which is sparkling, and alternating from blue to green, or as to picturesqueness of bold, rocky scenery all along, and remarkable vegetation. Let us dive inland.

I said we miss grass. I now say we also miss trees in Italy. There are alpine pastures, some few meadows, and there are also royal forests; otherwise the northern half of Italy is bare of trees. Population has crowded them out; the soil got to be precious. Hills and mountains, by means of walling and terracing, are cultivated to their very tops. The rains wash constantly down the soil and the walls will only retain some small portion of it. Nevertheless the hills and the mountains, as well as the plains, teem in Italy, and, were it not for this kindness of soil and climate, so many millions of men could not live on this relatively small peninsula.

One system of cultivation seems to prevail all over Italy. I would call it the bedstead system. The land is laid out in regular uniform plots, resembling bedsteads. Round its edges grow sometimes olive trees, but mostly mulberry trees, whose fresh leaves during the months of May and June, feed the silkworms. To produce a great variety of these leaves, and of fullest nourishment, the trees are regularly trimmed every winter so as to have

only four branches from the top of the trunk, at the height of about fifteen feet from the ground, from which four branches the new twigs start. Where silk is not made, maple, willow or some other tree gets trimmed the same way. They all serve the purpose of props to vines, which are trained from tree to tree, and thus form a live trellis round the field. The field itself is parcelled off into small plots of wheat, oats, Indian corn, interplanted with potatoes, vegetables, melons and what not. It is incredible, in fact, the diversity of things grown within that bedstead shape, and that such happy family will peaceably grow tegether, without jostling and without killing one another, is the wonder. The soil is precious, the most must be made of it, and the untiring industry of the Italian farmer and the favoring elements do the rest. Neat as it looks, it looks unpleasant to us liberal Americans, who have so much ground and to spare.

Allow me now to come back to gardening proper. It does not compare in one sense with our own gardening or with English gardening; it is neither such trim and careful work nor as thorough. The difficulties here are too few. Our best productions, no matter in what line, are but the triumphs over ourselves, and man is not called out in Italy as much as in Pennsylvania to show his mettle. Of course this sentiment must not be carried to extremes. Both at the equator and at the poles man must knock under to nature, he can tame her but little there; he can never make her his servant, and his victories there won't show much. But if in Italy one-half of the trouble were bestowed, say on roses, or peaches, or anything else, I say one-half only of your or your neighbor's endeavors in Pennsylvania, what results there might follow!

Once in a while, but at very wide intervals, you meet with a lawn here or an English garden. Otherwise the architectural is the Italian style. Parterres, ribbon beds, geometrical figures, circles, walls of evergreens, mostly of evergreen oak, marble steps, a fountain, ever so many busts and statues, grottoes, pieces of water with Neptune, the naiads, dolphins, swans, boys in the middle or round about, a sun dial, or a mosaic floor, arbored walks, with stone flooring, ruins of antique temples, or of an ancient castle, summer houses built of solid thick stone, and very cool inside, these are the features of an Italian garden, whether in the city or in the country, far too stiff and too stony for my taste, but often very perfect of their kind.

I may in future give you details of a few of the Italian show places.

THE CHINESE NATIONAL FLOWER.

BY MRS. C. L., FRANKTOWN, NEVADA.

I have never seen in print the story or legend the Chinese have about their national flower, "Twe dan Fa," a variety of Polyanthus Narcissus, which blooms at their New Year, in February. A man died and left two sons. To one he left all his good fertile land and house; to the other he left nothing but a little piece of poor, stony, wet ground, that no rice or anything else would grow on. He was in distress, and had nothing to eat, so his god took pity on him, and one morning he looked, and the ground among the stones was covered with beautiful white flowers, and the god told him to care for them and sell the plants to buy food. So he prospered and became richer than the other brother, and his ground was the only place the flowers could be had."

There is a double form of the flower, and they (the Chinese) consider it fortunate for the flower to be double. Last year my Chinese cook brought me three fine bulbs—they come in clay. A friend's cook had given her some, and the first one to bloom for her was partially double, and the first one of mine was single. My cook was quite annoyed, but my others were double—one like a small rose, with nine large trusses on one cluster of bulbs. He was quite pleased, as he said it was "good too me; you sabe good, good; heap plenty to you." Another time the same cook gave me some, and I had one bloom in January. He went off when he saw it in bloom to keep his New Year. He came back in a day or so, and when he came into the house he went to where the flower was and said to it: "You heap cheatee me; you no sabe anything;" they use the Spanish sabe for know. It had bloomed too soon.

[The Chinese read from the top down. The three characters are the Chinese words.—Ed. G. M.]

EDITORIAL NOTES.

WHAT IS A GARDEN.—It is a great comfort to find once in a while a judge deciding by the rules of common sense, instead of higgling over the meaning of words. Before us is a report of a trial in England. A lady willed to another her "house

and garden." A low evergreen hedge divided the garden, on one side of which were solely fruit trees; and vegetables, low fruits and flowers on the other side. It was contended that the fruit part was not a garden, but an orchard. The judge decided that if this were to be admitted, the lady would have died intestate so far as the orchard was concerned, but the fact that she made a will showed she had no intention of dying intestate. It was not to be supposed that she had forgotten that she owned an "orchard" when she made the will, and the presumption was that she intended the orchard to go as the garden. He declined to discuss the difference between the words orchard and garden, and with the testator's intention clear in his mind, ruled in favor of the defendant, the cottage holder. Justice Parsons' head is level, as Americans might say.

PRACTICAL ÆSTHETICS.—It is said that the great poet of the sunflower saw little else that was beautiful in our country. Our gardening is not beautiful, nor was there any beauty in Niagara Falls, but the *American Agriculturist* says he saw beauty in a swindle out of $1,600, which the "son of Tony Drexel" treated him to in New York.

CHARLES CRUCKNELL.—We notice in our last an advertisement of Mr. Crucknell, who is well known to our readers as one of the most intelligent of the many contributors to the magazine. Before his removal to Missouri he was engaged in Pennsylvania. If the Missourians have no chance to retain his services, we are quite sure those Pennsylvanians who were sorry to have him leave them, would be very glad to see him back again.

DR. C. C. PARRY.—The demand for the beautiful new species of rose, Rosa minutifolia, has been so great in Europe that Dr. C. C. Parry has been induced to make another botanical excursion into Lower California, chiefly with the view of supplying the wants of nurserymen everywhere for it. He was to leave the end of January. It is fortunate that horticulture is the means of inducing this intrepid botanist to brave again the dangers of this inhospitable region, as no doubt other new things will still turn up.

JOHN ELLIS.—Mr. Ellis died recently in California, as we see by a note in the *Rural Press*. He must have been beyond sixty years of age. He was one of the most intelligent horticulturists in the Union, though with some peculiarities, which those who knew him intimately charged probably with justice, as well as from the attractions of his many good points, to occasional mental aberrations. As an able horticultural writer he was well known a quarter of a century ago, as "Fox Meadow." In California, his work in laying out the grounds of the Capitol, and the State University receives high praise.

MR. JOHN W. SLATER.—Among recent deaths is that of this well-known florist of Alexandria, Virginia, in his seventy-second year. He was one of the many model men of whom horticulture in America has such good reason to be proud. Starting in life with no capital but great intelligence, a high sense of probity, and good common sense and industry, he lived to become comparatively wealthy, and to exercise a wide-spread influence in shaping the course of things around him. Judging by the *Star* of his city, few men have dropped out in Alexandria more sincerely regretted.

A SOUND MIND IN A SOUND BODY.—Dr. M'Carthy, of Dayton, Ohio, remarks that of all occupations there is none which requires so close a union of mental activity with physical energy as the various pursuits of gardening, which therefore make a human being as near perfect as he was designed to be. He remarks that:

"There is no other occupation better adapted to effect this than that of the horticulturist, whose ever varying duties call into frequent action the numerous powerful muscles that erect the spine, expand the chest, propel the body, sustain its burthens and perform its heavy work, as well as the smaller ones that move the hands and work the fingers in the innumerable skillful digitations so necessary and effective in training, fostering and directing his delicate plantlets. The voluntary muscles, useful and indispensable as they are, are like well-grown indolent persons, who will do nothing of their own accord; they need constant supervision and direction. They are, however, obedient, docile and efficient—work well under a master, making the best of servants."

THE HILL CUMORAH.—A very pretty hill is Cumorah, between Palmyra and Canandaigua, New York. Besides its beauty, it has interest from being the place where Joseph Smith reported he found the plates from which he wrote the Book of Mormon.

GARDENING FOR YOUNG AND OLD, by Joseph Harris: New York, Orange Judd Company. In the preface, Mr. Harris says he would particularly urge young people to turn their attention to seed growing, not that he wishes to see horticulture diverted to a mere money-making business, aside from its refining and nobler influences, but would

like to see both kept in view. The work seems to have for its main object the encouragement of horticulture among the young, and because of this very style will be welcome to older folks. Many of us who are whitening with age, learn more when we are taught as if we are children than in any other way. We regard this as a good, useful book, even though it may tell nothing new to those who have already had an extended experience.

COLORADO AS AN AGRICULTURAL STATE, by N. E. Pabor: New York, published by the Orange Judd Company. Those who only know Colorado by reading about it, imagine a dry, barren country, and think of what such a country must be for agriculture; while those who see it for the first time do not think much of Colorado from first impression of the agricultural prospect. But a short acquaintance dispels the illusion. Irrigation does better than nature. It does not pour when enough has already been provided, and refuse a drop to earnest supplication. By irrigation we can water when we please, and stop whenever we please, and the plant enjoys this good treatment so much that it does its best in return. The writer of this has seen fifty bushels to the acre from wheat on the Arkansas, and there is scarcely an agricultural crop common in the East but may be made to yield considerably more in Colorado than an Eastern farm ever knew. It is evident, however, that it requires a greater amount of intelligence to farm on this plan, than it does on the "trust to nature" system. A work like this of Mr. Pabor's is just what the man of intelligence needs. It will be a necessary companion to the Colorado immigrant, unless he is willing to spend years in learning for himself what he could here get the track of by a few hours reading. Not only the agriculturist but those interested in any pursuit will profit by a perusal of the work.

FORESTRY BULLETIN NO. 23, United States Census, has just been issued. It gives an estimate of the consumption of wood as fuel in the United States during the census year. Also a map of the United States showing the character of the fuel used on the areas marked on the map. Over 32,000,000 people use wood yet for domestic fuel, and for these no less than 7,361,992 cords, $15,067,651 in value, in the great coal state of Pennsylvania alone. We have to look in the future for something else besides fence posts and railroad ties.

ANNUAL REPORT OF THE DIRECTOR OF THE ARNOLD ARBORETUM, 1881-82.—From Prof. E. S. Sargent, Director. Annual Report of the Director of the Royal Gardens, Kew, 1881, from Dr. J. D. Hooker, Director.

We are glad of the opportunity to notice together the annual reports of these two excellent institutions, established in the old and the new world, the one in a vigorous infancy with a promise of a long and useful life, the other old in years, but as young and flourishing in useful work as it ever was. From Prof. Sargent's report we notice that the New Sylva of the United States, which will give colored plates of all the trees of our country, is in a good state of progress towards completion.

Among the many useful chapters in the Kew Report are those relating to new facts in coffee, gutta percha, India rubber, and especially cinchona. In connection with the last named it may be noted that the experimental plantations in Jamaica have proved a great success wherever they have been made at elevations between 2,500 and 5,000 feet, but have failed at lower ones. The Director of Kew Gardens believes that at no distant date Jamaica will produce enough bark to supply the demand from the United States. Dr. Alfred S. Kennedy, of Philadelphia, has for some time been enthusiastic in his belief that it would succeed in some parts of the United States, and desires the United States government to attempt its introduction. For our own part we do not know of any place where it is likely to succeed. Unfortunately the United States has no "government stations" in different parts of the countries where knowledge from actual experiment, under the direction of intelligent gardeners, could be obtained. The experimental grounds under the direction of the State Colleges may some day supply this deficiency, and many of them could do so well already. No doubt Professor Hilgard, of the University of California, could soon tell whether it was worth while to invoke government aid for Cinchona culture in any part of California.

LES PLANTES POTAGERES, description et culture des principaux lègumes des climats tempèrès, par Vilmorin, Andrieux et cie. Paris, 1883. (Kitchen Garden Plants, and the principal legumes of temperate regions, with their description and culture.) This is a magnificent work of 650 pages by this world renowned seed firm, profusely illustrated by fine engravings and giving minutely the histories of everything known. It is amazing what numbers of plants are under culture, of which little is as yet known in our country. Though the French language is now widely understood in

America, we believe an English translation issued here would have a wide sale, and we submit the idea to the enterprising authors.

THE VIRGINIAS.—Among the many magazines issued, the bulk are passed over with a momentary satisfaction, and that is all. Those which are of a permanently interesting character are few and far between. *The Virginias* (old Virginia and new Virginia), edited by Major J. Hotchkiss, of Staunton, is one of these substantial serials. It is devoted wholly to the development of the industries of these States. It seems to us that no one who has either direct or indirect interests in the two Virginias, but will profit by reading it.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

HAWTHORNS.—"E." says: "The racy sketch of hawthorns in your February number, by your intellectual correspondent, W. T. Harding, of Mount Holly, N. J., will kindle a glow of pleasing remembrance of youthful days in every British-American heart. I remember well the blossoms in May, and the haws in November. It is the British hedge-thorn, which poets and orators have made famous, that caused all other species to be highly prized. Burns paints it with silver and gilds it with gold in expressing his ardent love for "Highland Mary:"

"How richly grows the gay green birch!
How sweet the hawthorn's blossom!
As when beneath its fragrant shade
I clasped her to my bosom."

IMPROVEMENT IN YOUNG GARDENERS.—"Chip" sends the following pleasant note: "The first requirements of successful gardening is close and always prompt attention. It is so in every business; but irregularity in gardening is from the first start failure. No matter how fine a theorist, it will help you nothing if you are not prompt in practice. Close observation and study of nature is your surest guide. Take advantage of sunshine; regulate your glass structures at once; in stormy and gusty weather secure as much as you can; start your fires early in cold days. In fact be prompt, always on your guard. Do not think: "I will do this or that, yet a little longer delay will not hurt." My friend, that is just the most fatal to your success. I know some of us have more on hand than we can always properly attend to; but study, with work, helps things along. It is a poor excuse to have no time for study. But always look to your main work first.

"Now, Mr. Editor, whether to publish this, my first attempt of ever writing for the MONTHLY or any other paper, you are the best judge; and if you find it worthy of space, I hope a well meaning advice will not offend."

INQUIRIES FROM CORRESPONDENTS.—It is not unusual for correspondents to apologize for "troubling the editor." The editor cannot write private letters to inquiries, except as a matter of personal business or to personal friends; but when the answers may benefit other readers as well as the one who inquires, it is a pleasure to respond. Questions, therefore, suitable for reply through the columns of the magazine, are always welcome.

THE LATE MR. EDWARD MEEHAN.—Mr. Falconer writes: "Well do I remember the lamented father of the Editor years ago. On visiting St. Clare, I met him there, a tall and genial gentleman, lithe and active, and an enthusiast in his garden. It was there I saw for the first time a multitude of plants growing out of doors that I had used to know only as inmates of greenhouses. And he was keen to tell their history to the boy, and I as eager to glean the information from his patriarchal lips, for he had then passed threescore and ten. I was in England in November when I read his obituary in the *Garden*. I was grieved to lose him, and disappointed in thus being unable to meet him, for I was going to the Isle of Wight, and intended visiting him."

THE GARDENERS' MONTHLY FOR 1883.—It is not unusual to receive numerous compliments from subscribers when renewing their subscriptions, but this year they seem more numerous and cordial than usual. Many thanks to all for their good will. As a specimen J. D. Y., Clinton, Iowa, writes:

"Please continue the GARDENERS' MONTHLY. I cannot get along without it. It has so many good things in it. Strong's article on side graftings alone, in one of the numbers, is worth the price of it to me this year. I tried it on some grape vines in August, also on cherries and plums, as well as roses, and they all lived and are to-day looking fresh and plump."

THE

GARDENERS' MONTHLY

AND

HORTICULTURIST.

DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

VOLUME XXV. APRIL, 1883. NUMBER 292.

FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

A RETROSPECT OF SUMMER.

BY JAMES MORTON, TORRINGTON, CONN.

In pursuing this terrestrial journey of existence, amid the many turns and vicissitudes that too frequently befall the uncertain destiny of man, it is at all times cheering to learn of the progress of each other on the winding pathway that we tread. If good and fortunate, that we might endeavor to turn our wavering thoughts and guide our energies in a similar course; and, if otherwise, to be warned against treading in such footsteps. And among gardeners in particular, much might be learned, and many evils surmounted, that thwart the way, and clog the wheels of their onward progress, by a clear and frank acknowledgment within these pages of some of their successes and failures alike. It is all very well to write of one's success, but why not have a line or two on failures as well? And now from a small standpoint I will proceed to make a few remarks on some things that have done well here, and some that have not, which, from the limited scope of my observation, and the limited resources at command, must not be taken as a criterion of things in general throughout the bright spots of this land, where the starry banner of horticulture has been unfurled.

The soil in this district is light and sandy, on a subsoil of calcareous loam, hence its moisture-retaining properties are small, and a dry time has a ruinous effect, and never in the memory of the oldest inhabitant have they experienced so long a drought as last summer. About July 4th, we had a copious downpour for a couple of days of that refreshing liquid, and since then (save but a few showers at intervals, hardly sufficient to lay the dust), until September 11th, we never had the ground wet enough for vegetation to rush with any stimulus. Consequently many things succumbed outright to the scorching rays of an almost tropical sun, and most of what struggled through was weak and puny, and got prematurely ripe. The spring was late and cold, nothing starting until late in the season. Coleus, for weeks after being planted in their summer quarters, dwindled in the chilly atmosphere, and promised poorly for a good display, but with the revival of—to them—a more congenial temperature, although far into the season, they assumed a new life, and went ahead, making a good show. The best, I find, for massing, is the old Verschafeltii. A large bed of this, with a wide margin of Stevia var., the latter kept pegged, had a pleasing effect. Hiawatha looked good for a time soon after it began to grow, but as the season advanced it showed a tendency to flower, and the leaves it produced were smaller

than at first, and of a paler and less beauteous hue than heretofore, for which reason I consider it only middling for bedding purposes, and hardly that. Glorie d' Automne did pretty well, but not assuming its rich markings so vividly as a few plants kept indoors as a means for perpetuating its species. A dark-leaved variety, with a purple tint on the veins, of which I don't know the name, served its purpose in good style for lining through the lighter sorts, or intermixing with such as Stevia variegata, or Centaurea gymnocarpa. Meteor, Monarch, Golden Beauty, Delight, Perfection, Aurora, May Queen, Monitor, James Vick, Columbia, Jewel, Triumph, and President Garfield, while they stand pre-eminently suited for indoor culture, have not here any special merits for open air brilliancy. Alternantheras have not assumed their rich golden and crimson tints this season, notwithstanding the brightness and dryness of the summer. Golden Feverfew (Pyrethrum parthenifolium aureum), has been a signal failure. It looked good for a time after planting, but soon began to damp and spoil the effect where planted. Mesembryanthemum cordifolium variegata is a plant I thought unmatched for carpet bedding, but here, beneath the rays of a scorching sun, it is worthless, never producing its sparkling leaves and stems as is its wont in a more salubrious clime. Browallia elata, I find, is a good thing for a ribbond border; so, also, Chrysanthemum frutescens. Lobelia erinus compacta made an admirable line for the early part of the season, but later on it drooped its tiny heads all round, began to damp away in the center, and finally most of it disappeared long before the others ceased to be gay. Asters do not finish well here; they grow and bud with amazing vigor, but ere they reach the summit of their beauty they turn prematurely brown and die away. Dahlias do pretty well, but many of the buds, for some reason or other, never come to anything, rotting away, while other blooms make a profusion of beauty. Heliotropes, tuberoses, geraniums, verbenas, phlox, salvia, pansies, gladiolus, ageratum and many varieties of lilies appear to do best here. Achyranthus, too, wherever planted, seems to be the leading feature, and thrives under many circumstances.

Among vegetables, corn, peas and beans are very poor, the latter so late that many won't get filled ere the frost overlaps us with its icy mantle. White corn got prematurely ripe from the intense heat and dryness of the atmosphere. Beets, potatoes, onions, tomatoes, cauliflower and celery are all good. Melons were also a good crop, and gave hopes of a plenteous yield of fruit. But ere they reached maturity, I went through the hills one morning and espied some footmarks that seemed as much out of place as that solitary one Robinson Crusoe beheld in the sand, on his desolate island, together with a broken fence rail, which were vivid indications that the marauder had been at work; for gone were the melons, and naught but the sere and shrivelled leaves remained to compensate for the time so vainly spent in a hopeful endeavor to mature what nature nurtured until the hand of greedy man tore ruthlessly away.

Such episodes as these metaphorically sip the honeyed nectar of the gardener's pride, and plant with burdocks his bed for roses, testing his abilities to refrain from vindictive thought or supplant his ruffled feelings with more hopeful views than his first impulses presented. But fortunately in the gardener's career such incidents dwell in an inferior minority. Still, though most of his toil and exertion invariably give pleasure, they are not all devoid of pain. It is nice to scatter the tiny seeds and watch them burst and spring forth from their moulded beds, and then behold the weak and puny buds develop into flowers of unequalled beauty. It is also nice to trip o'er the dewy-crested lawn, and brush the shining drops away in quest of some fair specimen of the floral tribe; but is it nice to find on going through one's plants in the morning, that the slugs had directed their peregrinations through some pans of seedling Gloxinias, leaving nothing but their slimy trail behind? Or, how is it for fun to find your neighbor's cats all squatted in the pansy beds, or basking in the rays of an evening sun upon his boxes of geranium cuttings?

I fear I have traveled wide of my mark and lost my subject in the sentiments of a gardener's care; therefore I will add the remaining shred to my tree of retrospect. If the past season has had its glories mingled with adversities, his patience will bear him o'er its lacking features, and fortified with the knowledge of the past he must ultimately achieve victory over his failures, and then in such hopeful contemplation, can say: What if the past season was unfavorable, the coming will be better.

CANNA EHMANNI.

BY MR. A. NEUNER, LOUISVILLE, KY.

Being familiar with the nature of this strikingly new Canna, we wish to give a few hints to your readers about the treatment of tubers after frost has killed the leaves. Unlike other varieties of

Cannas the leaf-stalks of this sort are more fleshy, and the new eyes or side-shoots less prominent, and unless the tubers are kept growing after taking them from open ground before frost touched the leaves, or if leaves have to be cut off after frost killed them, the opening and drying off has to be done very slowly, and in a warm house, or the roots will invariably rot. The only really safe way I found to be to cut off only a part of leaves and bury the roots under a bench in a light and warm place when vegetation will be kept up all winter, or at least until new shoots show themselves.

Then only it will be safe to divide the roots too. Canna Newtonia iridiflora has the same habit and foliage, and requires same treatment. Its sole difference is in the color of its flowers, being of a lighter red.

I may mention that we have succeeded in raising a beautiful yellow blooming Canna, flowers same size as Canna Ehmanni.

FLOWER-BEDS.

BY MR. N. ROBERTSON, GOVERNMENT GROUNDS, OTTAWA.

The beauty of a design is to have it brought out so that any one can tell what is meant, without being told, as is the case in many instances. To show a distinct pattern with flowering plants, requires a considerable amount of attention and care to be properly done, for which I practice two plans that may be of some advantage to your readers.

To keep my colors from intermixing I use two plans, one is putting a line of some stiff growing plant between the colors, to harmonize and be trimmed to line and height. Say it is a red, I use Achyranthes, and for a white, Cineraria maritima, or some such plants. My patterns are drawn on the bed, and they are planted on the lines. Another method is planting short stakes around my lines, not to show above the plants, and running stove-pipe wire on them, and turning the colors to their respective sides. All this may seem a good deal of trouble, but will well repay by a distinct pattern, for this is the main point in all such work, and I would especially advise all who try such beds with flowering plants, to evade intricate patterns, or acute points, and not less than bands of two feet wide, for considerable mass of color is required to give effect.

With plants such as Alternantheras, Thymes, Pyrethrums, &c., and low growing plants, as Echeverias, Sempervivums, Sedums, &c., any design almost can be carried out; the first can be clipped into any form, and the last will not outgrow their position.

My designs are all planned, drawn to a scale, and colored nearly to that of the plant to be used; during the winter months, calculating the quantity I may require—and being sure to have plenty to plant close, as our summer seasons are so short that early effect is required. This study of my patterns I consider a very important part; for let any one go out in the spring without this preparation—and he will surely make many mistakes which this will obviate.

When my beds are dug and made firm, I have them raked smoothly; I then put a plank across, raised on blocks at each end; if the bed should be wider than can be reached in this way, I put two feet into the end of a plank, resting the feet in the bed, and the other end on the grass, or walk; from this I draw my plans, and plant, never treading on my bed after it is raked. For this purpose I use a large wooden compass, rule and line. The compass is extremely useful where you want to follow a curved or irregular edge, setting it to the distance you want, keeping one point to the edge, and marking with the other. The planks I use in the same way when doing all my summer trimming of the beds, thus leaving no unsightly marks.

I mentioned in a late number of your paper that my facilities for keeping over such a large quantity of plants (about twenty-five thousand), is very limited, and had driven me to try various plans, and have them look ornamental as well. The greenhouses are visited by many, especially during the session of parliament, and it would not do to have them otherwise than neat and tidy. My passages being wide enough to admit of a box four inches wide and five deep, attached to the front of my benches, this box runs all round, and is filled with the different varieties of Alternanthera, which when broken up in the spring and put in the hot-bed, gives me a large quantity of it, and gives a fine finish to the benches, as a border.

As to other plants, such as Echeverias, Sempervivums, Pachyphytum, Verbenas, &c. In the first two only offsets are saved, and put closely into boxes made of a uniform height and width, painted green, filled with sand; the last two are made of cuttings, and treated similarly; the boxes are placed on the front of the benches in another house, and look very ornamental, the back portion of the benches being filled with other plants. These are samples of many things I use in this

way. Sometimes I save the old roots and put them on some out of the way place, and they soon push up young plants which are taken off in the spring and make nice plants.

With such things as geraniums, when taken up in the fall, only the cuttings are saved, and boxed up in the same manner in boxes of sand, and put on a shelf all round, close to the glass, where they are not much seen, and by the month of March are all rooted and potted up; by this time they can be put in hot-beds, and are in the best order possible for bedding in the latter end of May, which is as early as we can put anything out with safety here. Such plants as Salvia officinalis, Mesembryanthemum cordifolium and the Thymes are all done in this way. Any amount of cuttings can generally be got from them early in the spring in this way, from which I make large quantities grown in the hotbeds. Only in a very few cases do I ever keep over the old plants, and that where plants grow so slow that one year is not sufficient to grow them large enough to be useful, such as Leucophyton Brownii, &c. All this will be nothing new to practical men, but will be of benefit to many who are not acquainted with this way of keeping over large quantities in a small space, as to which I have many inquiries.

HOPE FOR CITY TREES.

BY MARGID DIGRAM.

A drug store on upper Broadway, N. Y., between the squares—possibly it is directly opposite the Union—may now be seen of evenings brilliantly illuminated with electricity. The light is not furnished in a large globular lamp, as we have heretofore seen it, but is broken up into a multitude of jets, each of which is surmounted by a vase-shaped shade, if I may so term it, of clear glass, which has a broad line of ornament chased or ground upon it. This shade is especially mentioned because it seems to be a helpful feature. The light given off from the small jets is not silver colored as in the spherical lanterns, nor of a rich gold color as in the gaslight, but is somewhere between the two; resembling, in fact, that which we see in the stars, and casting off, like them, scintillating beams or radiant lines of light.

From this upper Broadway pharmacy, I suppose, the new method will spread until every city, town and village within the Union is as richly furnished. Now this fact, it seems to me, is of some interest to the arboriculturist, and to the lover of ornamental trees. With the actual departure of the gaslight, and its accompanying nuisance of gas waste, the tree grower, if he is a lover of his kind, should make an heroic attempt to again carry his vegetation within the city limits, and regain and plant the streets which have too long suffered from his absence.

It would be well, if in the cost of each tree set, should be included also a fee for the care of it for a number of years, say five or ten, the oversight to cover the two or three weeks immediately following its first insertion in the ground, and subsequently a semi-annual inspection and cleansing from insects. Though the majority of town residents seemingly labor under the impression that arboreal vegetation will take all necessary care of itself, it is a mistake, and tree growers as a body should see that they are better informed, and keep them so by periodically refreshing their wonderfully short memories.

EDITORIAL NOTES.

STRONG-ROOTED PERENNIALS.—Many perennial plants are better for being occasionally transplanted, but there are others where the rule will not apply. At a recent meeting of the Massachusetts Horticultural Society, C. M. Hovey said that "the Fraxinella should be grown from seed where it is wanted; it makes strong woody roots, with no fibres, and is very difficult to transplant. The same is the case with the Asclepias tuberosa, which he esteems the most beautiful of all our native plants."

FAILURE IN NARCISSUS AND DAFFODILS.—A Germantown correspondent last year asked us about the failure of some old beds to make good flowers. At a recent meeting of the Massachusetts Horticultural Society, Mrs. H. L. T. Wolcott said that "her narcissus buds failed so that she gave up in despair, but she took them up and reset them, and every bud gave a flower."

ROSE NIPHETOS.—This, which has become so popular with cut flower growers in America, is just as popular on the other side of the world. It is an old rose now, as it was raised by a Mons. Bougere-Breton in 1843, and it is remarkable that its merits should not have been noted till 1870 or thereabouts. Surely "Hope on" might be the motto of many a good rose which thought itself neglected.

FINE OLD JUDAS TREE.—In the garden of Mr. E. Harcourt, at St. Clare, in the Isle of Wight, there is just now a Judas tree, Cercis siliquastrum,

in blossom which is worth a pilgrimage to see. It would hold its own even in the environs of Smyrna. The tree is 18 feet high, and the circumference of its branches is about 75 feet. At this present moment it is laden with blossom, and its kind of ruby-red against the dark foliage of a tall Pinus insignis, which grows close by, is most striking to look at.—*H. E., in Garden.*

GINGKO.—The maiden hair tree is found to be quite hardy at Montreal.

THE ASH AS A STREET TREE.—Dr. John A. Warder says: "In this prairie country one of the very best trees for street planting is the green ash. The size is just right, the growth when young is rapid, the form is easily controlled by judicious trimming, and the foliage is very neat and of a healthy green, which is nearly the same on both sides of the leaves. Then, too, the trees may be had at reasonable rates from any nurseryman. Whole blocks, or indeed whole streets, might well be planted continuously with the green ash, and produce a good effect.

EVERGREENS IN THE SHADE.—It has often been noted in these columns that evergreens often die when under other trees, not so much from shade as from the drouth and poverty brought about by the numerous roots of the larger trees. A heavy manuring will often give vitality enough to keep such hedge plants in good heart, when it is particularly desirable to have them in such situations. Of success under these circumstances with arborvitæs a correspondent of the *American Garden* gives a good example.

ROSE MADAME BOLL.—The French *Journal des Roses* remarks that rose growers derive no little satisfaction from the contemplation of fine, vigorous foliage, as well as from fine flowers. In this respect it praises especially this fine old Hybrid Perpetual, Madame Boll. This was raised in 1856 by Mons. J. Boyan, of Angers, from seed of a rose-colored hybrid perpetual crossed by Bell Fanert. It was named after Mrs. Boll, the wife of a well known florist of New York city.

A LONG ISLAND GINGKO TREE.—In Mr. Henderson's Handbook of Plants, mention is made of a fine tree on the grounds of Mrs. Manice, of Queens, Long Island. It is not near as old or as large as many in the country, the one at Woodlands, for instance, being one hundred years old, but it is a very fine tree of its age. It is over 35 feet in height and 3 feet 2 inches in circumference, one foot above the ground, and has been planted about thirty-seven years, though no one knows its exact age.

HARDY CYCLAMENS UNDER TREES.—This little sketch of Cyclamens was from a group allowed to run wild among the grass under some trees in a garden at Tooting. Right bravely for years they had held their way among the grass and weeds and carpeted the ground with their glossy leaves, and flowered freely in winter and early spring. Although mostly a South European, North African and Western Asiatic family, various species grow on the hills, and they are with very few exceptions thoroughly hardy. There should be no difficulty in naturalizing cyclamens in copses and half shady places, where the surface vegetation is not too rank. We believe they will grow in many of the places for which people so often seek for "plants that will grow under trees." The mossy floor of many a grove where grass will not grow may be enamelled with the Ivy-leaved Cyclamen, with C. Europæum, C. vernum, and, in fact, most of the species and varieties, with the exception of the Persian cyclamen, so well known as a spring-flowering greenhouse plant, and which is not hardy everywhere.—*Garden.*

SCRAPS AND QUERIES.

BEDDING CLEMATIS.—A Canadian correspondent says: "Those who have tried the clematis as a bedding plant, trained on the ground, will oblige me and many others if they will report their success through the medium of your GARDENERS' MONTHLY, stating the position where they have done so and what varieties they prefer for this purpose. If they will succeed in this way they will make a fine display, and be very valuable in bedding, if they only make half the display they do when trained upright."

RAISING SEEDS OF HERBACEOUS PLANTS.—"N. B. C.," of Bucyrus, Ohio, says: "For the last four or five years I have planted, and given to two or three friends, seeds of the following plants: Aconitum nap. (Monkshood), Belladonna atrop. (Nightshade), Digitalis purpur. (Foxglove), Conium mac. Hyoscyamus niger (Henbane). I have always obtained the seed from three different dealers. But the result was the same, invariably—a total failure, not a seed of any variety growing. Last year one of my lady friends had a few plants of digitalis, and she fondly looks for blossoms the coming summer. All the above are, I think, indigenous to the United States

and Europe, and I have tried to imitate as far as possible the natural conditions and habitat of the plant, but without success. Can you put me on the track of some specific information as to the proper method of planting and managing such seeds? Is the subject one of sufficient general interest to justify a few brief hints in the GARDENERS' MONTHLY? I am anxious to raise these plants, as it is difficult to find medicinal portions of them in market that are satisfactory."

[The failure could scarcely be from bad seed, for most of those named keep good for several years. Most likely the failure comes from deep sowing. Plant as early in spring as possible, make the merest scratch in the ground, cover the seed slightly; then press the earth very firmly, and partially shade. There will be little failure under this plan. Occasionally seeds of these plants lie over in the ground till the second season.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

STEAM HEATING.

BY C. F. EVANS, ROWLANDVILLE, PHILA.

In accepting the task imposed upon me of giving my experience in steam heating, I have done so fully aware of the fact that I am standing before those far beyond me in business experience. I therefore claim your indulgence. So impressed am I, however, with the importance of steam-heating in connection with our business, and so fully am I convinced of its superiority over all other modes of heating that I gladly avail myself of this opportunity to add my testimonial to the many that steam has already secured. Last winter, the first season in my career as a florist, we had five greenhouses, two heated by Hitchings' boiler, the remaining three by means of flues. I soon became convinced that both ways were far from perfect, and in the anticipation of building more houses I immediately commenced looking for some more improved method. I became impressed with the idea that steam would be the most effectual and desirable means, and of course read all the articles in our various journals for and against it with deep interest. I corresponded also with all the florists in the United States who were using steam wherever I could find them. Besides this, I sought the advice of some of my much esteemed brother florists in Philadelphia, many of whom have been so kind and generous in their associations with me. I found much to encourage me in my pet theory, and yet much to deter. Instances were quoted me of men who had been ruined through its use, and indeed I must acknowledge that many times I would decide at night that it would not be safe to try the dangerous experiment; that I must stick to the hot water system; yet invariably a night's sleep would dispel the misty doubts, and the next morning would find me possessed with a greater longing for steam than ever. Late in the winter, having heard of some greenhouses in Flatbush

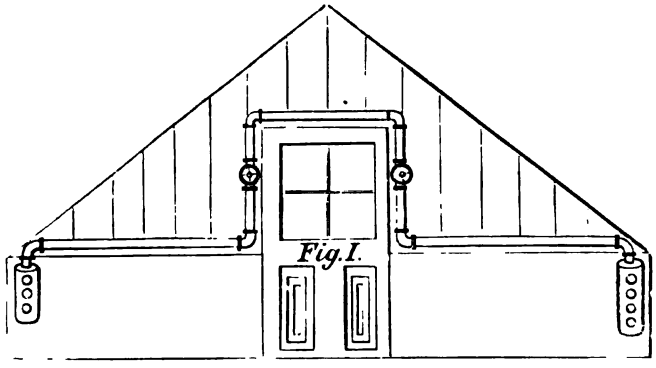


FIG. 1 shows how the steam enters over the door, and is then run over to the coils situated on the sides of the house. The black dots represent the valves controlling the coils.

which were heated by steam, I determined to visit them. I found the proprietor far from being perfectly satisfied, and again my ardor was dampened. I had read in the GARDENERS' MONTHLY the advertisement of the Exeter Heating Apparatus, and upon writing to the company I received from them such information as decided me to go to Boston and see one of their boilers in operation. I felt I had found the right thing; indeed, so much was I pleased that before I left Boston I bargained with them to heat my ten houses.

I will now give a description of my boiler. The Exeter heating boiler consists of a series of sections rectangular in form, two feet long, two and a half feet high, three and a half inches thick. Each section is cast with eight openings through it two inches by twelve inches. These sections being arranged over the fire two inches apart, transversely to the draft, the openings form fire tubes (although not continuous, as the spaces between the sections unite them into one space), and increase the heating surface, while their walls tie the flat sides of the sections together.

Every angle is rounded inside and out, and the bottom and top faces of each section have wave-like forms, to permit expansion and contraction. The lower and upper parts of each section are connected by an extra heavy pipe, extending through the wall of the setting to a main outside drum common to all. There is an automatic damper regulator which is attached to the boiler, and operated by the steam it can be adjusted to any desired pressure (say two pounds in cold weather), and when the steam reaches that pressure it immediately acts on the automatic regulator, shutting the draft door and closing the damper in the pipe leading to the chimney, thus checking the fire and preventing an increase of steam. As the pressure decreases slightly, the lever falls and opens the draft. In safety appliances there are a safety valve and safety plate.

From the upper drums (spoken of in the description of the boiler) start the steam main, which is perpendicular for twelve feet, and then branches off and runs through both of the sheds;—the pipe always growing smaller the farther it gets away from the boiler; at the center of each house this pipe is tapped and the coils run in the houses. I have a drawing of a coil. These coils have a fall of nine inches in every one hundred feet, so that all condensed steam runs to the lower end, where a drip is taken out of the bottom of the manifold (this drip also having a fall of nine inches to one hundred feet) and runs into a main drip which runs the entire length of the shed; it is underground, and has a fall of two feet towards the boiler. In my five houses, 22 feet by an average 115 feet, there are 16,445 cubic feet each, or 82,225 cubic feet of air in all to be heated. These houses each have about 1,000 feet of 1¼ inch pipe. In my other five houses—three 12x96 and two 18x96—there are 50,976 cubic feet of air to be heated, and there are about 3,000 feet of one-inch pipe; so that in all we have 133,201 cubic feet of space to heat and 5,000 feet of 1¼ inch and 3,000 feet of inch pipe do it admirably. Before speaking of the advantages gained by steam I would like to say that each feed which supplies the coil has a valve on it; each drip has a valve; each coil has an automatic air valve, and upon each end of the coil is a manifold which is so arranged with a system of valves that I can use as many pipes as the weather makes necessary. The advantages of steam as they occur to me: (1) The pipes certainly do not occupy one-fourth of the space demanded by hot water pipes; they are usually against the

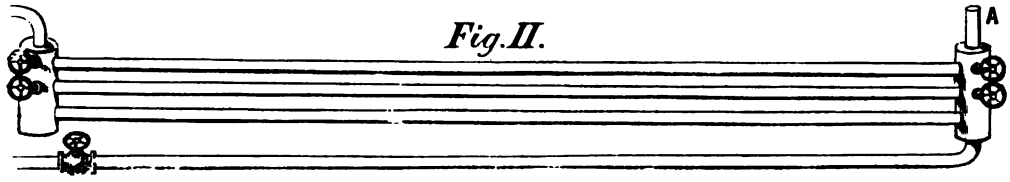


Fig. II.

FIG. 2 shows a coil with manifolds on each end, and the drip taken from one of them. The letter A represents an air valve.

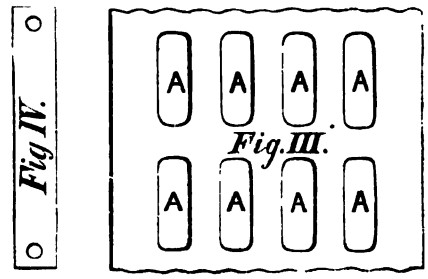


Fig. III.

Fig. IV.

FIG. 3 shows a front view of section—also showing the flue pipes formed, AAA.

FIG. 4 shows an end view of section, showing openings into which the pipes running into the water and steam drums are.

partitions, and quite out of the way. (2) The heat can be graduated to the greatest nicety, distance from the boiler being of no consideration, those farthest distant can be heated, without heating those near at hand, if desired. Should you want to keep a house cold, let the valves remain closed; if not so cool, turn on one pipe; warmer, two pipes, and so on. (3) As to the dryness of the heat from steam pipes—which some claim as a disadvantage—I must own that I fail to see why the heat radiated from iron pipes should be changed at all in character as to moisture, whether the heating medium inside the pipe be steam or water. (4) A most important advantage in steam-heating is the great economy in labor. With five houses last winter we required eight fires in the coldest weather, quite distant from each other in location. Now with more than double the amount of glass, we have but two fires in the same boiler hole, side by side. Then again, no fire can be more easily managed, the automatic dampers work to a charm; indeed, as far as such a thing is possible, it seems to me the apparatus is almost self-regulating. With reference to economy of fuel, I consider it compares very favorably with other means. I should suppose that we burn about three tons of coal per week, and we cover an area of over 20,000 square feet. Probably some of my older and more experienced friends can better form a comparison in this particular than I.

Much as I favor heating by steam, I do not think that I can too strongly protest against entrusting the applying of it in greenhouses to the care of those who do not fully comprehend the peculiar necessities of the case. Many good steam-fitters, with much experience in applying heat by steam to ordinary buildings, would fail probably in giving satisfaction in greenhouses. But properly applied, I think it cannot fail to produce successful results, and the happy florist who introduces it into his houses will doubtless join me in thinking steam heating without a rival.

MORE ABOUT STEAM HEATING OF GREENHOUSES.

BY E. H. BOCHMAN, PITTSBURGH, PA.

Two years ago I was prevailed upon to give an account of my practical experience in the use of steam-heating of greenhouses, partly urged by some of my fellow florists, and partly feeling annoyed, to tell the truth, by noticing so many misstatements on the subject appearing in horticultural publications in this country, as well as in England and Germany, most of which evidently bore the stamp of ignorance and prejudice on the part of their authors, while others, in their own description of the apparatus, gave the key to its failure. Had I known the avalanche of inquiring correspondence I was about to precipitate upon myself, I might well have hesitated; but, on the whole, I suppose the thorough agitation which the subject has received ever since, has been of practical benefit to the cause of floriculture. When I can state that at this day every florist's establishment of any considerable size about this city is heated by steam and giving entire satisfaction, and when I am furthermore credibly informed that several other cities are doing scarcely less, I may be justified in the belief that this agitation has borne some fruit already. It is but a day or two since I met one of our prominent florists, to whom I had given some slight assistance in the shape of advice in regard to steam-heating. It happened to be the day after the most blustering cold night we had this winter, and the enthusiastic endorsement he accorded steam was a caution to skeptics.

The new system (I am only speaking of my own experience with it) has now been on trial seven seasons, and so far it has failed to verify in any one particular the doleful predictions so prevalent at the time when the original bantling began to be talked about. Boilers and pipes have obstinately refused to burst, and the plants grown with aid of steam-heat somehow or other remain distressingly healthy, other treatment being equal, as a matter of course; and what a difference in the attention required! Let me give an illustration from practical experience in a place, the houses of which formerly were heated by eight hot-water boilers in severe weather. It used to keep one man on the go continually to stoke his fires and watch his thermometers; one or more of the fires requiring to be kept at the greatest attainable draft, while some others performed their allotted duty with less frequent attention. After a night of such labor the man would be completely worn out with being overheated at one time in front of his furnace, and chilled at another in traveling to the next. Now for the contrast. Instead of eight fires, located perhaps three hundred feet apart, he keeps one; his valves have been regulated for the different temperatures desired on each house, and a week's practice teaches him what pressure of steam he requires to offset any given outside temperature, while his steam-gauge is right before his eye to tell the tale. He takes an occasional glance at his out-door thermometer, and finds, say an exceptional

degree of cold, perhaps accompanied by high wind; as a precaution he goes the rounds of his houses and finds old Boreas is getting the upper hand of the fifteen or twenty pounds of steam he may be carrying at the time; that is, he finds 58° where he wants 60°, or 40° where he desires 45°. Does he rush back frantically to stir the fire to greater exertions, or rouse up help to cover the threatened plants with blankets or muslin or paper? Not much he don't; he returns to his boiler and sets the weight of his pressure-regulating valve a few pounds further out, or similarly, if he uses a damper-regulator, he adds a few pounds there. and in the course of a very short time he is absolutely certain to have his houses right to a degree.

Perhaps some of my readers may think the above blanket story overdrawn, but it is not; it happened in my own experience not once, but half a dozen times in one season, not above five miles from New York city, and moreover in what was then and is now one of the best appointed establishments in the country.

If the following information appears lengthy, I wish to offer the excuse that I know the subject to be of some interest to literally hundreds of the readers of the MONTHLY, as I have their letters to show for. To answer each individually became an utter impossibility, as the scope of questions contained in any single one was so extensive as to require going over the whole field in detail.

To begin with the boiler or boilers most suitable. Nearly every inquiry embraces that, and would be easily enough answered if the kind of fuel most convenient to the respective locality were mentioned. If soft or bituminous coal is your fuel, and your concern is large, say upward of 3,000 feet of glass, I should use the Cornish boiler as the one producing the most economical results; but its first cost is considerably above that of any other pattern. Next in order for the same fuel comes perhaps the so-called Mississippi steamboat boiler, containing a double flue. For anthracite or coke I should give the preference to the following styles of boilers in the order named: 1, locomotive, fire box; 2, tubular, with the fire under the boiler; 3, sectional boiler. The boiler once chosen, the next thing in order is the best location for the same; if the topography of your site admits of a difference in levels, place your boiler at the lowest possible point, so as to be able to return all the condensation to it by gravity; even where your ground will not admit of that altogether, it is of advantage to secure as low a level as possible, inasmuch as the automatic return trap will have to lift the condensation just so much less, and will work at a lower pressure, as it requires about one pound of steam to raise a column of water two feet.

Be careful to secure ample draft by giving your smokestack or chimney an inside area one-third greater than the combined area of the flues or tubes in your boiler, and make your connection from boiler to chimney as direct as possible. As regards the position of the pipes in your houses, be particular to have them hung (which is far preferable to resting them on fixed supports) with a uniform descent to the pipe or pipes conveying the condensation back to the boiler, thereby avoiding the unpleasant cracking noises heard in pipes improperly placed. Make all your connections from the main pipe to the heating coils of uniform size; say ¾ or 1 inch for very long lines; observe the same rule in your connections with your return pipe, for which, however, you may use a size smaller valve, as, for instance, ½ inch valves on return connection to ¾ inch for live steam, and ¾ inch valves on returns to 1 inch for live steam.

The relative amount of your radiating surface in your heating pipes to the area to be warmed, of course varies with climate and exposure. For our locality, where the mercury occasionally falls to 20° below zero, and on reasonably well-constructed houses I give the following relative figures:

Area of house in cubic feet.	Temperature wanted.	Radiating Surface of pipe in square feet.
70	55°	1
50	65°	1

The size of pipe which I find best adapted to the purpose is 2-inch or larger (wrought iron, of course), designated in the trade as black pipe (lap-welded) and I cannot but repeat my warning against the use of too small pipe, a mistake I have had to persuade against in every new attempt at steam heating; people are led thereto by a notion of supposed economy, than which nothing can be more erroneous. There are two reasons against the use of small pipe on long lines. The first is the rapid condensation going on in comparison with that in large pipe, thus necessitating a much higher initial steam-pressure, and second, the waste of a large percentage of heating power in friction. It would be feasible to convert the steam into electricity instead of heat by carrying it in pipe sufficiently small in diameter.

On the other hand, the introduction of steam as a heating medium in establishments already pos-

sessing more or less considerable area of glass heated by the hot-water system, had not unnaturally led a few into an opposite error, that is, to attempt to utilize the existing pipe (4-inch cast iron) to convey the steam therein. In the case of the ordinary soil pipe, generally used for hot water, I do not hesitate to state most emphatically that they are useless for steam, no matter at how low a pressure. I have admitted steam to a line of them at less than half-pound pressure, and had upward of 100 feet of them cracked in an instant. The much heavier pipe made by some manufacturers (Messrs. Hitchings & Co., for instance), may be able to carry steam at low pressure; but I should hesitate about assuming so great a risk; and why should you do so when there are several ways out of the difficulty? In the first place, by taking your pipe apart, you may realize, as has been done here, to my knowledge, almost if not quite sufficient to pay for a complete outfit of steam apparatus. Should your pipe, however, be joined with iron filings, and therefore too troublesome to take apart, I should advise the adoption of the method described by Messrs. R. G. Parker & Co., of Boston (Sept. No. G. M., 1880), that is, to heat the water in your pipes by steam through a coil introduced in place of your respective hot water boilers. You will thereby enjoy nearly all the advantages of the steam system, and may of course use direct steam-heating apparatus in any additional houses, while firing the entire establishment from one point.

To mention a few other points suggested through the correspondence arising on the subject, and which I shall touch as briefly as possible: Capacity of boiler in horse powers. From my experience I should advise one-horse power for each 120 square feet of radiating surface, which in two-inch pipe is about 240 lineal feet; but I consider liberality on that point a wise economy. Another point of advice is to rather use two boilers placed in battery, but in such a way as to be able to use but one at a time or both together, as circumstances require. Be sure to provide both ample steam and water connection (4-inch or more), for reasons it would take too long to explain, but is nevertheless of greatest importance.

The advantage of being able to return the condensation to the boiler is so great, not only regarded from the standpoint of economy in fuel, that I venture to allude to it again; much the same as Mr. Peter Henderson, referring so frequently to the importance of firming the soil about seeds because of its great importance. In addition to effecting a most decided economy in fuel, it insures freedom from scale or mud deposits in the boiler, because the same water is used over and over again. It also insures you from the danger arising from a sudden stoppage of your water supply, caused by freezing, or perhaps a break in the water pipe which supplies you, and which would leave your boiler dry before you could devise any means to prevent such a mishap; in short, my urgent advice is, not to neglect this point above all others. I regard all other devices for the better control of steam as a heating medium, highly valuable as some of them undoubtedly are, as secondary to the absolute and constant return of the condensation to the boiler. Of these above devices I would mention as very desirable a good damper-regulator; its name sufficiently describes its use; also a reliable pressure-regulating valve, which will keep the steam in your heating pipes at any uniform pressure you may want (thus guarding against overheating through carelessness) as long as you maintain as much or more pressure in your boiler.

Such safety-guards are not only of great assistance in the uniformly even performance of the entire apparatus, but they also effect a very noticeable saving in fuel.

I believe this covers the principal points of the inquiries I have had on the subject. I have tried to avoid the use of technical terms as much as possible, so as to be intelligible to those of your readers not mechanics enough to grasp their meaning. If I have succeeded in making myself understood I shall feel amply paid for the effort.

BLISTERED LEAVES IN GREENHOUSE PLANTS.

BY G. GEDULDIG, NORWICH, CONN.

It seems that most florists and gardeners do not know how plants get burnt through the sun. Mr. Peter Henderson, even, advises in his pamphlet, "Greenhouse Structures," to throw away all glass having flaws, etc. I never found burnt leaves from such glass. All burns I found to come when water lodges between the laps, which will make a focus when the sun strikes it on the right angle. Such panes of glass do not lay tight enough on each other, hence the blistering water is held there. Such laps should be filled with putty.

[Mr. Geduldig is probably correct in his judgment. The writer of this has hitherto believed with Mr. Henderson and others, that some defect in the glass has caused the blistering; yet he has often endeavored to trace the relation between these burnt leaves with the ideal "blister in the

glass," without success. Moreover, he has seen leaves of camellias and callas badly burned in some seasons, pass through without the slightest injury in others, though placed in the identical places—which could hardly be, if the same burning blisters in the glass were there. There may be variation in the quantity or condition of water between the laps, while the glass itself will remain the same.—Ed. G. M.]

STEAM-HEATING.

BY JAMES SHORE, GERMANTOWN, PA.

In your February number, Mr. E. Holley, of New York, asks some questions regarding steam heating. I would say that I would not advise the putting in of smaller pipe than 1½ or 2-inch size. His house being, as he says, 100x20 feet, and 5 feet in height, it gives say 12,000 ft. of air surface. To be heated to a temperature of 65° it would take three rows of 1½-inch pipes, or two of 2-inch, on each side of the house, allowing sufficient heating surface for extreme cold weather. Allowing 1½ pounds steam in low pressure boilers, the greater the pressure the higher the temperature. Low pressure, with automatic dampers and valves, is a more economical system than that of hot water. The latter calls for the heating of ten times the amount of water that steam requires. All pipes should have a gradual fall from boiler of 1½ to 2 inches in every 10 feet of length, then it requires no pressure to force the water through the pipes. See that the pipes furthest from the boiler are not less than 14 inches above the water line of it;—more will be better. The return pipes must descend to boiler, connecting with the bottom of it. Such a house will take a boiler containing a heating surface of 130 feet, or of about six horse power. One of twenty horse power would heat four such houses. All things being equal an ordinary boiler will answer the purpose. It is better to have a boiler with automatic arrangement so that the pressure and temperature will be uniform. Leaving a good fire at 10 P. M., it would need no attention until 7 A. M. the next morning.

EDITORIAL NOTES.

FLOWERS IN CHICAGO.—During the week before and after Christmas, Mr. Edgar Sanders estimated the following "cuttings" of flowers grown for market by the florists of Chicago:

"Roses, 77,000; Carnations, 82,000; Hyacinths, 32,000; Lily of the Valley, 10,000; Violets, 15,000; and Smilax, 12,000 strings; with eighty of the smaller fry to hear from."

One florist, J. C. Vaughn, reported as his October sales, 61,000 carnations, 10,000 roses, 6,000 tube-roses, and 1,100 strings of smilax.

INSECTS ON FLOWERS.—Says a correspondent of the *Garden:* "The best insecticide, and the safest I have ever met with, is nicotine soap, which, from containing the active properties of tobacco with other ingredients, is fatal to insects, and has a marvellously cleansing effect on the bark of trees, which it frees from all parasites in very quick time. For using on the stems of vines and peach trees it is quite unrivalled, as with a brush and a slight scrub, followed directly after by a dash of water from the syringe, it leaves them bright and polished, free from all slimy deposits and other confervæ. At one time peaches and vines used to be daubed with a coat of liquid clay and other mixtures to smother scale, but with nicotine soap there is no need of this, and anyone who is troubled with that insect, or red spider, or thrip, has only to apply the wash to be rid of the pest. If on the young shoots of peaches, the best way is to syringe it on at a strength of four ounces to the gallon of water, used at a temperature of 90° or 100°, and immediately afterwards the stems of the trees should be scrubbed and the whole rinsed off at once.

HEATING GREENHOUSES.—Some years ago we suggested that a hot pipe be carried up near where the great enemy frost was to be attacked, and not solely along the floor of hot-houses. Many of our florists now have small hot water pipes running along at the foot of the rafters. The idea has crossed the water, although English climate is not so severe on greenhouses as ours. Leading nurserymen have the plan in practice.

NEW INVENTIONS.—It is remarkable how long the world will be near a first-class invention without actually stumbling over it. The writer remembers, when examining the first sewing machine which came before him, how put out he was to find it but a simple adaptation to machinery of the common chain stitch so familiar to boys of the last generation, who had to make their own toys. Why could not some of these bright boys have invented this machine long before? It now appears from some of the mummy garlands unearthed in Egypt, that the florists of three or four thousand years ago, used the chain stitch in fastening the flowers to the wreaths. A long time to be so near a great discovery.

CROTON LEAVES IN FLOWER GLASSES.—Anyone who has a number of flower glasses to keep supplied with cut flowers during the winter and spring months, often finds it more difficult to obtain a supply of fresh fern fronds than flowers, especially during the spring, as the fronds are cut as soon as they appear, and they keep fresh for a very short time in such a young state. For the last few years in filling our flower glasses we have always furnished a few with Croton leaves of different varieties, and find them both useful and effective. Large, trumpet-shaped glasses, with a few arching leaves of Croton Warrenii, give a graceful appearance, and for smaller glasses the leaves of the old variegatus section answer well, and save both ferns and flowers. The plants that we denude of their foliage for this purpose are such as have been used for room-decoration. Those plants when put back to their old quarters, the stove, generally lose all their leaves by degrees, and it is best to cut them down and let them start afresh.—*David Murray in Jour. of Horticulture.*

THE "SMILAX,"—MYRSIPHYLLUM ASPARAGOIDES.—We note by the English papers, that the English florists begin to believe that possibly the American taste which makes use of such large quantities of this plant is perhaps not at fault, and that it possibly might be worth while for English florists to go and plant some.

POPULAR CUT FLOWERS IN FRANCE.—We note by a French paper that it is reckoned that the daily sale of natural flowers in Paris realizes about $20,000. The flowers most in fashion at present are the gardenia, which sells at five francs each flower; the lily of the valley, worth ten francs the pot; the queen rose and the purple rose, the Spanish carnation and the violet. Of the latter a large number come from Nice; but they have not the perfume of those grown around Paris. The camellia, at one time so much prized, is now quite out of fashion, just as it is in our country, though there are signs that it will regain here some at least of its lost popularity. It may be as well to note that the French franc is worth about twenty cents of our money.

ROSE CAROLINE GOODRICH.—This, we suppose, tea rose, was raised by Mr. T. Walsh, gardener to F. Goodrich, Esq., Riverdale, New York. The flowers are of a deep red color, remarkably fragrant, and about two and a half inches in diameter when fully expanded. Mr. Henderson says it is unsurpassed in fragrance, the only deficiency being in the form of the expanded flower.

THE DOUBLE WHITE BOUVARDIA IN EUROPE.—The *Journal of Horticulture* says: "The Double White Bouvardia Alfred Neuner is becoming a great favorite with the florists and bouquetists in Covent Garden, and the flowers are now quite abundant in the windows there. It appears to be greatly appreciated for button-holes, and for this purpose the flowers are admirably adapted either associated with rose buds, violets, the single scarlet and pink bouvardias, and similar flowers.

SCRAPS AND QUERIES.

CURCUMA ROSCŒANA.—"B. T.," Reading, Pa., asks: "Will some one who knows, of your many subscribers, give the treatment of Curcuma Roscœana? I have been growing it for the last four years, and have not been able to bring out its beautiful bracts which are so highly spoken of. I have grown it in a warm greenhouse, and outside in the hot sun. The growth has been large but the bracts would not come."

ROSE ETOILE DE LYON.—Specimens from Nanz & Neuner indicate that this beautiful yellow tea rose is fully the equal of Marechal Niel in beauty. A good tea of this character, but without the rampant and often shy blooming character of the Niel, ought to be an unusually valuable introduction.

CARNATION FROM "L. W. E.," POUGHKEEPSIE, N. Y.—A seedling, said to be distinct in shade from all colors under cultivation, was sent to us, but packed in dry cotton, and so shrivelled that we could not determine the character.

NEW OR RARE PLANTS.

CRINODENDRON HOOKERIANUM.—Messrs. Veitch say of this plant that it is one of the most beautiful hard-wooded greenhouse plants of recent introduction. It is a dwarf evergreen shrub, native of Southern Chili, where it is quite rare.

The plant is of bushy habit, and furnished with rather narrow-pointed, bright green leaves, sharply toothed at the upper half.

It is remarkably free-flowering; the flowers either singly or in pairs, are produced from the axil of nearly every leaf towards the ends of all the shoots. They are about the size of a walnut, and pendulous from rather slender footstalks, two to three inches long; the petals are of thick, waxy texture, like those of Lapageria rosea, and of the same brilliant scarlet-crimson color.

A colored engraving of the plant is given in the

Garden for November 27th, 1880. In the same journal for May 22d, it is described as "one of the most remarkable new plants we have seen for a long time, and constituted by far the most interesting among the numerous new and rare plants shown at the Royal Botanic Society's Exhibition on May 19th, on which occasion it received the award of a certificate of merit."

Crinodendron Hookerianum.

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

A VISIT TO A PEACH ORCHARD IN OYSTER BAY, QUEENS CO., L. I.

BY ISAAC HICKS.

Last autumn I accepted an invitation to visit a peach orchard. The proprietor had tried an experiment which was so successful that he was pleased to have his fruit-loving friends examine and admire it too. Some five or six years ago he took a piece of new land recently cleared of trees, planted three acres with peach trees. Said piece was nearly surrounded with woods or trees, with a southeastern exposure, and the soil a light sandy loam with a portion of clay intermixed one or two feet below the surface. Although Long Island is a large and rather valuable moraine cast up by that immense glacier that covered New England in periods long past, we find occasional patches of clay scattered amidst the strata of sand and gravel of which our island is composed. Our friend plowed and tilled his new land as best he could among the stumps, raising crops of vegetables while the trees were small, and above all, not allowing a weed to grow. His instruction to his men was to destroy every weed they saw at any time they saw it, and the purslane—they must put it in their pocket and throw it over the fence. And the trees were the most beautiful and thrifty we had ever seen. He had cut back a part of every year's growth, manured it moderately with the addition of phosphates and ashes lightly every year, I think he said, and they had grown from eighteen inches to two feet this year, although bearing full crops this year and last. A few were showing the appearance of the yellows, but several of these bore full and finer fruit, ripening earlier and coloring finer than others. He had spent about two weeks in thinning the fruit when small, so that no tree should overbear; the fruit was of even size—little inferior fruit to be seen. He was a novice in peach-growing, and was much interested in selecting the most profitable sorts when they were purchased. The results may be interesting to others. The early peaches were not profitable; some rotted sadly, were of small size, and brought small prices, too. The Mountain Rose, Crawford, early and late, and the Barnard, a yellow peach, and rather late, were very satisfactory. But none were so beautiful and good, that we saw, as the Oldmixon free; large, rich color, luscious, they filled every requisite of a good peach, and were ripening, when we were there, in all their glory. Later kinds than the Crawfords were not profitable; so many do not ripen up unless we have a fine warm season on Long Island. Ward's Late was not valuable to raise for market. Susquehanna is large and very fine, but not enough of them. Yellow peaches at present sell better than white of same size. The sales in 1881 from three acres amounted to $950, or near that. The present year (1882) he would not realize so much; the price was less. The sheltered position, protecting from the severe cold winds in winter, and the virgin soil, united with the best of care, were the secrets of success, and the question is, who will or can do likewise and enjoy so great a reward?

TO DESTROY CABBAGE AND OTHER WORMS.

BY GEORGE GEDULDIG, NORWICH, CONN.

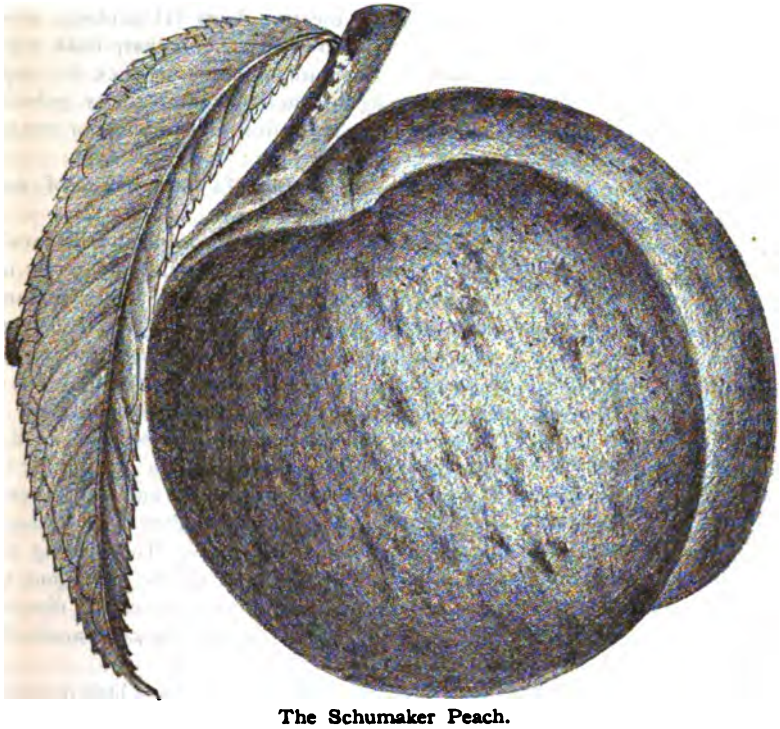
Your February number quotes an English paper as advising to pick off the cabbage worm or caterpillar by hand—a good piece of work at high wages! I will give a better way to get rid of any caterpillar or slug on any plant, no matter how tender, or whether in flower. Take a handful of hellebore, sieve it fine into a large water-pot, pour three quarts of boiling water on it, stir it well and fill the pot full with cold water. Take a syringe or the fine rose of a water-pot, and put the liquid on. In twelve hours the worm is gone.

STRAWBERRY RUNNERS.

BY A. A. BENSEL, NEWBURG, N. Y.

Many of the small fruit catalogues contain items of information to growers which may prove of importance. Instance the following, which I venture to say has seldom been the subject of thought. I take it from "Strawberry Culture and Catalogue," of Matthew Crawford, Cuyahoga Falls, Ohio: "All who have cultivated strawberries must have noticed how inconvenient it is to have the runners

extending in all directions. Sometimes they run from one row to another, where they are torn up by the cultivator, and sometimes two plants send their runners toward each other, making some parts of the row too thick, and leaving others vacant. All this may be avoided by setting the plants in such a position that they will run in a given direction. I discovered years ago that the strawberry plant sends out runners in but one direction, or from one side, and that is the side opposite the old runner that produced it. If the side of the plant from which the main runner was cut is set toward the north that plant will run to the south." This hint will be useful in the patch as well as in the small fruit garden.



The Schumaker Peach.

THE SCHUMAKER PEACH.

BY C. S. CARR, ERIE, PA.

It is acknowledged to be the leading peach in this section, and earlier than any other by ten days, and has not failed to bear since beginning, in 1877, every year. Young trees last season had from five to fifteen peaches, and the owners, citizens of our city, were so proud that we had many samples left and requests to call and see our new peach from July 3d to 10th. We sent you specimens two years ago.

[Our readers will remember the favorable notice we gave of the fruit at that time.—Ed. G. M.]

PEAR-TREE "BLIGHT."

BY CHAS. D. ZIMMERMAN, BUFFALO, N. Y.

This subject has probably been before you at every meeting since the organization of the society, and in looking over the proceedings we feel very much like a member who said at a meeting as long ago as 1855, "I have read a wheelbarrow load of books on the subject and have learned nothing," and in a recent publication we find: "Now, Mr. Editor, I have a firm belief that nobody knows anything about this disease more than another, and it is a waste of time to listen to anybody's say about it." Hoping your society will pardon me for adding another "straw," I will be as brief as possible.

The progress made toward discovering the cause of pear "blight" has certainly appeared very slow to those who have been compelled to see their trees stricken down under the best (?) of care, nearly powerless to prevent the spread of the disease.

Nearly every writer on pear culture in the past, has advanced different theories as to the cause and treatment of the disease, variously termed "fire blight," "sap blight," "frozen sap blight," "insect blight," "summer blight," "winter blight," etc.

Insects were often accused of being at the bottom of all the trouble, and we are not quite ready to give them a verdict of acquittal. They are charged with aiding in spreading the poison, and for many it would be hard to prove an *alibi*.

Electricity was believed by some to be the cause, with plenty of argument to back it. The appearance of "blight" after a thunder shower is a well

known fact, which would appear as conclusive evidence.

The theory that the freezing of sap in a healthy branch will cause "blight" is still prevalent. Tender or unripe shoots often suffer or are killed by sudden freezing and thawing in the sun, causing, however, a different effect from the so-called blight. A blighted spot, the size of a hand, often found on the trunks of trees, would be difficult to explain by the "frozen sap" theory.

I do not believe that sap ever freezes in a healthy tree. Frost extracts moisture from the plant cells, and if the roots do not extend below frost, or where they can supply the deficiency, the bark shrivels, and the tree often dies.

It was left for the microscope with its modern improvements, and to the accuracy of investigations made with it, to reveal the true nature of the mysterious disease. In a letter to the GARDENERS' MONTHLY (August, 1875), Dr. Hunt says: "I have examined those pear branches, and find that the black color is caused by a fungus. * * * I cannot name the fungus. Repeated observations only can determine that question. * * * I have made thin sections of stem, bark, fruit and leaves' and removed excess of black color until I could send daylight into every cell; and then under * 500 the parasite reveals its presence.''

For the next five years little progress seems to have been made, except that the German and French naturalists, principally Cohn, Magnin, Pasteur, and Frische, continued to publish their experiments and discoveries. In 1880, Professor Burrill announced that "blight" in the pear, apple, and quince was caused by bacteria, the smallest living organism known. He found that they destroy the stored starch grains, causing the same to ferment, leaving the cell structure apparently unharmed.

With the poisoned sap he inoculated healthy trees, of which over sixty per cent. showed signs of "blight," clearly proving that bacteria is the cause and not the effect of the disease. No counter evidence has been brought against these experiments of two years ago.

About twenty years ago, Derlaine stated that bacteria belonged to the vegetable instead of the animal kingdom, as was the belief up to that time, and only a few years since it has been proven that they attack and destroy living matter. They increase by "fission," dividing in the middle, under favorable circumstances, once every hour, and sometimes even oftener. Once an hour would be at the rate of sixteen and a half million in twenty-four hours. A few species are also perpetuated by spores, like fungi. The most favorable temperature for their rapid development appears to be about 95° Fahrenheit, together with plenty of moisture.

Prof. Burrill is of the opinion that this kind of bacteria (Micrococus amylovorus B.), is rarely found floating in the air, being extremely viscid, and usually mucilaginous, when moist. In this condition they would be readily carried about by insects. The most likely to aid in their dissemination would be the true bugs (Hemiptera), who obtain their food by the use of a sharp beak, with which they puncture the bark to suck the sap, and by coming in contact with the sticky, poisonous fluid, may carry it from one branch or tree to another.

The following is Burrill's description of the species:

"*Mycrococus amylovorus, Burrill.*—Cells oval, single, or united in pairs, rarely in fours, never in elongated chains; imbedded in an abundant mucilage, which is very soluble in water; movements oscillatory; length of a separate cell, .00004 to .000056 in.; width, .000028 in.; length of a pair, .00008 in.; of four united, about .00012 in."

It is quite evident that the disease is one of the outer cellular bark, as the bacteria are unable to penetrate through the best cells, and can spread up or down only by working their way through the apparently solid cell walls. There being no such things as sap veins in plants, analogous to blood veins in animals, the spread of the disease from the point of attack must be comparatively slow.

Soil, situation, exposure, &c., have little or nothing to do with the disease. That some varieties are more subject to its attack than others is well known, and has been fully discussed by your society, as well as lists published of those most exempt.

Of the different modes of cultivation, the one that produces a moderate, healthy growth should be preferred to that of excessive growth. It is quite apparent that trees highly stimulated by manure, severe winter pruning, and clean cultivation are most subject to "blight." The orchards uniformly most exempt from "blight" that have come under my observation were those well cultivated in grass, *i. e.*, the grass kept short by repeated cutting (never allowing the grass to ripen or go to seed), with occasional, at least biennial, top dressing of barn-yard manure, or other fertilizers. In short, treated like a lawn. The annual

growth will be moderate, but healthy; quite different from those stimulated to excessive growth by clean cultivation and the stereotyped annual cutting back of two-thirds of last season's growth.

Remedies: Eternal vigilance and a sharp knife. Carbolic acid is extensively used to destroy bacteria; it may be diluted with 1,000 parts of water to one of the acid. Quinine is also used. Cold does not kill them, but activity ceases at or near the freezing point. Frische claims that 123° Fahrenheit below zero will not kill them. In the adult state most bacteria are destroyed in water heated to 150° Fahrenheit; spores have been known to survive a short immersion in boiling water.

I have often prevented the increase of poisoned parts by carefully cutting off the outer bark with a sharp knife, and applying linseed oil. This must be done very soon after the appearance of "blight."

A careful examination should be made after every warm rain, and warm nights with dew. Such examinations should be made at least once a month during the summer. Any parts showing signs of the disease should be removed immediately; if an ordinary sized limb it had better be cut off; if on the trunk or large branches, the outer bark may be peeled off and the spot covered with oil.

All diseased parts removed, branches and bark shaved off should be consigned to the fire at once. It requires close observation to detect the disease in the first stages, the bark turning black is rather a second stage; and also to make sure that the cut is below all the affected parts.

In the case of contagious diseases among animals caused by bacteria, it has been found that the bacteria may be cultivated, whereby it loses most of its poisonous qualities, and animals inoculated with it take the disease in a mild form and are ever after free from that disease.

Now let us hope that some genius will contrive a way to cultivate the species of bacteria under consideration, so that by inoculating pear trees with it they would be "blight" proof. This would open a field for a new profession—a tree doctor.

[This paper was read before the Western New York Horticultural Society.]

EDITORIAL NOTES.

IRRIGATION.—Watering by irrigation, even where Nature is profuse in rain, is found to be so useful that in some of the best fruit and market gardens of Europe it is provided for. *Revue Horticole* says that in the middle regions of France, especially in Provence, artificial irrigation is reduced to a system, and practiced on a vast scale.

MOUSE TRAPS.—There are many ingenious contrivances for trapping vermin, the following from the "Gardening Illustrated" will add one more to the useful list:

"Take two common bricks, place them on their narrowest sides 4½ inches apart, say by the side of a row of peas, having previously levelled the ground. Cut a piece of stiff wire about 3½ inches long, on this thread a pea, bean, or any bait you choose, lean one brick in a slanting position towards the other, supported by the wire from about the center of one brick to the other; the slightest touch from a mouse and the slanting brick will immediately fall, and, I think, poor mouse will die instantaneously. I have frequently set over night four of these traps, and caught three mice in the morning. Birds never interfere with my traps."

OVER-BEARING PEARS.—One of the best pears is the Rutter, but it has a tendency to be remarkably productive. When allowed to bear all it wants to, it is about as worthless as a pear can well be. This is probably the reason why the Kieffer is so variable in character, as its tendency to fruitfulness is enormous. No fruit requires thinning more earnestly than the pear.

PLANTING DWARF PEARS BELOW THE GRAFT.—Mr. B. O. Curtis says: "Twenty-five and thirty years ago, guided by what seemed to be a general opinion among tree planters that the dwarf should not be planted deep lest the pear strike its roots into the ground and become a standard tree, I planted the lower part of the pear not deeper than the surface of the ground and raised the earth two inches higher; and not over one per cent. of them have formed pear roots. I would now prefer that all had formed pear roots and become half standard, as I would thereby get the advantage of the early bearing of the dwarf and the greater size of the half standard."

SCHOOLMASTER APPLE.—When we consider how numerous is the American list of good apples, and how difficult it is to choose between the large number of superior kinds pressing themselves on our attention, it is surprising to read that in England the "list of really good and useful apples such as are hardy and good bearers, is limited." In view of this fact the "Schoolmaster" has been introduced by Mr. Laxton. Out of a very large number of promising new apples submitted to the Fruit Committee of the Royal Horticultural Society during the past three years, three only have received first-class certificates—"Schoolmaster"

being one of the number. The fruit is beautifully streaked and colored and of rich and excellent flavor, with tender and crisp white flesh.

PYLE'S RED WINTER APPLE.—Mr. Achelis sends us in the end of February, some specimens of this large, showy variety, which proves to be one very easily kept over winter. It strikes us as being as profitable an apple as one can grow. The flavor, too, is fully equal to that of the great majority of popular apples.

FRUITING THE KIEFFER PEAR.—The *Rural New Yorker* has taken pains to get the views of a large number of prominent men who have tested the Kieffer Pear during the past season. It is worthy of note that none of them consider the flavor above good. As we have stated we have had some very poor fruit, but also have had some which have been at least the equal of any pear we have ever tasted. The quantity exhibited during the Centennial were all of this very superior quality. There must be some reason for this variation. When we know how much the over-crowding of fruit on a tree has to do with its quality, and when we know how enormously a Kieffer will bear if permitted to, we do not think it is far out of the way to attribute much of the inferior quality reported to over-production. In our office one of the friends who were unable to speak well of it, stated that his fruit was from a "two-year-old graft on a large pear tree, and which bore very freely." This is surely not a fair test.

THE SAND PEAR FOR STOCKS.—It has been supposed that as this grows so very strong and healthy it makes exceptionally good stocks for the ordinary pear. Mr. J. B. Garber says they grow amazingly for a year or two, and then suddenly stop and become stunted. He regards the Sand pear as of no value therefore for stocks.

CHERRY TREES IN JAPAN.—Among the flowers of spring it is to the cherry bloom that the Japanese pay most attention. Among the sombre old Cryptomerias and pines of Uyeno, its delicate white, or white gently tipped with pink, appears surpassing beautiful, especially on the drooping boughs. Mukojima, however, has the chief attractions. Here, along the east bank of the river Sumida, is an avenue, two miles in length, bordered with cherry trees. Early in April fleets of pleasure boats glide up the stream, filled with gaily dressed people of all classes. In the avenue it is difficult to make one's way, so dense is the throng. But at the side are little gardens, with tea houses where breathing space may be had, as well as refreshments, a specialty of the place and season being a drink flavored with cherry blossom. It is a merry sight, the endless vista of overarching boughs as white as if laden with snowflakes, each breath of wind scattering a shower of delicate petals; the cheerful crowd of holiday-makers moving quietly, or sitting in rest houses, with their tasteful attire and winning manners; the peals of laughter and fugitive strains of music; the tidy pavilioned pleasure boats moored to stakes which support the sedgy river bank; one or two sails of barges making their way down or up stream; a glimpse of the upper reaches of the river. City-ward the pagoda and great roofs of Asakusa, and above the great city, with its grey roofs, sprinkling of white walls, and wooded bluffs. Have we reached the "land of perennial life" of which the poets of Japan have so often sung? It would seem almost so; the whole scene is so perfectly delightful, so suggestive of undisturbed peace and prosperity.—*The Garden.*

STRONG ASPARAGUS PLANTS.—Since the writer of this first called attention to the fact, now many years ago, in the Proceedings of the Academy of Natural Sciences of Philadelphia, that asparagus was bi-sexual, much attention has been given to it from a cultural point of view. Among other things a correspondent of a contemporary suggests that the female plants, readily told by their bearing berries in the fall, produce weaker plants than the barren or male plants, and that they should be weeded out. We fancy that this is rather the result of hypothetical thought than of practical observation. So far as we remember at this writing, there is no rule of this kind. But it is worthy of further investigation.

GOOD VEGETABLES.—At a recent meeting of the Massachusetts Horticultural Society, Hon. James J. H. Gregory was called on to say something about vegetables. He said that market gardeners could afford to plant only such vegetables as are well tested, and it is the business of seedsmen to experiment with new varieties and introduce such as prove valuable. Some foreign vegetables, like the Soja bean (which is the most nutritious food in the world), are of little value here, though very important elsewhere. Mr. Gregory gave an interesting account of the history of several vegetables introduced by him. His account of the Marblehead squash was that it was brought into the country from the West Indies. He advised to grow the best varieties for market,

even if they were not the most productive, believing that they would command such a price as to make their culture profitable. When the Hubbard squash and Early Rose potato were first sent to market, the marketmen rejected them. The Stone Mason cabbage has one fault, which is more noticed by seedsmen than by farmers—a tendency to rot at the stump. Burbank's Seedling potato is decidedly later than the Early Rose. Early potatoes are most needed, as they are least liable to injury by the potato beetle, the last brood of that insect being the worst. There is no better cropper than Beauty of Hebron; it is much like the Elephant. The Early Munich turnip is the earliest of all, and a decided acquisition. The American Wonder pea is as early as the Dan O'Rourke. The John Bull pea has very stocky leaves; it is the best of the stocky peas, which do not generally fill out well, but this does; the pods and peas are both very large. Our hot, dry climate is not so favorable to peas as a moist, cool climate like that of England. Mr. Gregory recommended the extra early French turnip for trial The Peerless White Spine cucumber is an improvement on the common variety. Tailby's Hybrid is a fine kind. The Broad Wax pole bean is a desirable variety. Carter's Strategem pea is desirable for amateurs. Potter's Excelsior corn is white and very sweet. The Cuban watermelon sometimes weighed forty pounds; it is the same as the Excelsior and a fine variety. The Long Hill watermelon is a good variety; fairly early. The Valencia and Surprise are two excellent muskmelons; the latter is very delicious. Hancock's Early pea gives most satisfaction among the hard yellow varieties. Laxton's Earliest and Ferry's First and Best are the same. The Little Gem squash is fine for family use, though its color is not deep enough for pies. W. D. Philbrick said that the Early Drumhead cabbage, introduced by Henderson, is so early that it may be followed by a crop of squashes. It is larger and more solid than the Wyman or Wakefield.

FLAT CHINESE PEACHES.—It should be remembered that when these are referred to, the whole race is referred to. There are varieties of these, some perhaps better than others. The one being propagated in the Southern States is known under the Chinese name of Peen-to.

PROFIT IN CABBAGE.—Joseph Harris tells the *American Farmer* that: "It would not have been a difficult matter to grow 5,000 good heads of cabbage per acre, which could readily have been sold at ten cents per head. The planting, cultivating, harvesting, burying for the winter, and marketing, would not cost over one cent per head, thus affording a profit of $450 per acre. This is five per cent. interest on $9,000 per acre. We can afford to smile at those who sneer at us for plowing our land four or five times to destroy weeds and get it into good shape for starting a good field-garden." The chief object Mr. Harris had in view was to point out how much superior good land and well cared for soil were to the ordinary slipshod methods of treating the ground.

ELEVATIONS FOR PEACH GROWING.—It may be remembered that when altitude is spoken of in peach growing, mere height above the sea is not intended—any elevated spot which will admit of the fogs falling into the lower ground is the idea intended to be conveyed. And this is probably true of all fruits, as of peaches. However, in regard to peaches, the editor of the *Country Gentleman* remarks "that it is not altitude above the sea level which affects the bearing, but ground sufficiently elevated above sheltered valleys to be above the lakes of cold air which settle in those valleys. We have found by the thermometer a difference of several degrees, on cold, still nights, between the temperature at the bottom of such valleys and only fifty feet up. Those valleys may exist on table land a thousand feet high, and be fatal to the peach crop; and hills where the crop escapes may be only a hundred feet above sea level."

SCRAPS AND QUERIES.

GRAFTING THE APPLE ON THE PEAR.—"R. Y.," Austin, Texas, says: "I have suffered year after year from the depredations of the borer, to such an extent in my apple orchard, as to dishearten me. I find the apple is more reliable here than the peach, and the flavor is far ahead of some varieties grown at the North. I would have no difficulty in raising great quantities of this fruit, and could make it a source of profit by judicious selections and proper care, but all the remedies yet tried have not proven a perfect success in ridding my orchard of this pest. Close observation has convinced me the pear is the healthiest and longest lived of all the fruit trees, and as the borer does not touch it (at least this is my experience), I am of the opinion that if the apple can be made to succeed on the pear stock, we will find a remedy against the borer. The difference be-

tween plum and peach, or apricot and almond, and which are grown on plum or peach stocks, it occurs to me is about as great as that of pear and apple. Do you think if the apple thus grafted would grow, would it fruit?"

[There have been no successful attempts to graft the apple on the pear that we know of. Relationship is a poor guide in these matters. For instance the sycamore maple does not take well on its close ally, the Norway maple, but seems quite at home when grafted on the very different silver maple of America, and the pear takes well on the quince or hawthorn, but does not like the nearer apple. Only actual experiment decides these questions.—Ed. G. M.]

Budding Peach Trees.—Mr. McCarthy, at the Naval Asylum, Philadelphia, says he has a new method of budding peach trees, which is worth thousands of dollars to any peach grower, but as the method is not given in his paper there is no use in our publishing it.

Raising Seedling Fruits.—"Querist." It is not necessary to cross or hybridize fruits in order to get new varieties. There is every reason to believe that though a flower was fertilized by its own pollen, there would be some variation among the seedlings. So far as we can judge, variation seems to be a part of the nature of things. The progeny will of course vary more from the parent form when fertilization is brought about through the agency of some very different variety. Variation is no proof of crossing by another variety, or hybridization through another species.

Grafting Pears on the Hawthorn.—W. B. Brandt, Ohio, says: "We hear now and then of pears being grafted into the Cratægus. There are pears grafted into limbs of large trees in this section. What variety would likely be best for that purpose? Would the Crætagus oxycantha do as well as any? We have here what we call "The Red Haw," an edible fruit; is this a variety of the Cratægus; if so, what?"

[Though the pear can be grafted on the hawthorn, we do not know that the plan has much practical value. Some years ago it was thought that dwarf pears could be produced by this method: but as the hawthorn is no less free from the attacks of the borer than the quince, there is no gain, and then the quince stock is more easily raised. Experiments have not been followed up closely enough to afford any information as to the best varieties for the purpose. Any kind would no doubt do for stocks; though the English Crataegus oxycantha would perhaps be the best. The edible fruited hawthorn is C. coccinea.—Ed. G. M.]

Inquiry Concerning Canker-worms.—Prof. C. V. Riley, of U. S. Dept. Agriculture, says: "In preparing a bulletin on the subject of canker-worms, to be issued from this department, I find that much of our present information is of little service, for the reason that until the year 1873, two entirely distinct species of Canker-worms were confounded in description, seasons, habits, and geographical distribution. In many of the publications, of later date even, the distinction is made either not at all or insufficiently.

"The most widespread and best known species is the spring canker-worm (Paleacrita vernata, Peck). The female rises from the ground chiefly in spring, and secretes her ovoid and delicate eggs. The second species is Anisopteryx pometaria, Harris, and the female rises chiefly in the fall, and lays her eggs in serried and exposed masses.

"Will you please give such information as you possess, especially upon the following points, in regard to the occurrence of canker-worms in your own locality: 1. Which species, if either, is now found in your own locality, or has ever been found? 2. When was it first observed there? 3. During what years has it been especially injurious? 4. During what years has it been entirely unnoticed? 5. Has the appearance of the perfect or parent insect been confined to either season, the fall or the spring, or has it covered both?

"Wherever any doubt can or does arise in regard to the species observed, it is particularly requested that specimens may be sent to the Department. All expenses for packing and postage will be reimbursed to the contributors if a request to that effect is made; or boxes and stamps for the return of specimens will be sent to any person who will notify the Department of intention to contribute information and specimens.

"Observations may be made during all mild weather from the present month (November), until the middle of June. The more frequent and detailed the observations the greater will be their value. If you have not the time or inclination to make these observations personally, you will confer a favor by handing this circular to some person who will be interested.

"Should this circular come to the hands of any entomologist familiar with the two species, I would respectfully ask of such any information they may possess that will throw light on the range and preferred food-plants of either."

FORESTRY.

COMMUNICATIONS.

FORESTS SUCCEEDING FIRES.

BY R. DOUGLAS, WAUKEGAN, ILL.

I am glad to learn from the February MONTHLY that some one in Europe has noted the fact that the aspen sprung up on the burnt lands in Russia, as this will bring it to the notice of American writers on forestry, while my notes on the same subject would be likely to pass unnoticed. I called attention to this matter mainly to show the great damage that is being inflicted on the country by forest fires covering land with this worthless tree, that would in time produce valuable timber if the fires were kept out. There is nothing to excite wonder in this tree being found occupying the burnt lands in this country and Europe, at least not to you or me; as its habits, or rather its seeds, are adapted to this purpose more than that of other trees, and while its seeds are distributed freely over both burnt and unburnt forest lands, their nature is such that they can only germinate in the fire-burnt soil or in moist ground and in swamps, and it is reasonable to suppose that if there had been no forest fires this tree would have been confined entirely to moist land.

I think many of our writers have not given this matter of seeds the attention it deserves. What they call swamp trees are, many of them, well adapted for growing on high lands, but the seeds are of such a nature that they will not germinate on high lands in the natural forests.

The willows, the elms, the silver and red maples and numerous trees are only found on the borders of streams or in moist lands, while under cultivation they make an excellent growth on upland. They grow in moist places only, because the seeds could not germinate anywhere else. I think it is a wise provision of nature, for if the seeds of many of these trees could germinate naturally all over the high lands they would be a detriment to the more valuable kinds. Fortunately, the aspen is a small tree, and not very lasting, so that more valuable trees can in time recover their lost ground gradually. This also is a fact quite noticeable to any who travel extensively through the woods with their eyes open. But even one generation is a matter of some consequence to us, and it will take more than one generation for the valuable woods to "run out" the aspens on the high lands in the most extensive burnt districts.

EDITORIAL NOTES.

THE FUTURE OF THE WOOD SUPPLY.—In an argument for the general introduction of wood fibre for paper making, Mr. Thomas Christy says: "The supply of wood is practically inexhaustible. During 1881, five million tons of wood for paper making were introduced into the United Kingdom from Europe, and nearly as much from the United States. There is not the slightest ground for believing that the full supply of this raw material will ever fail." Mr. Christy evidently does not believe that we are near the end of our forest products.

LEGISLATIVE FORESTRY.—The most remarkable incident of the popular forestry excitement is that legislative bodies, moved to act under this excitement, take no counsel with those who could wisely advise them, but follow the lead of empirics or visionaries who, while they know a great deal about what was the direful result of cutting away forests in the old world a couple of thousand years or so ago, can scarcely tell a post oak from a pitcher plant, or plant or prune a tree successfully to save their lives. It has been the constant work of the GARDENERS' MONTHLY to save forestry from the work of these people, because nothing so injures a good cause as egregious ignorance. Take the various timber culture acts of the United States, the looseness of which we have so often exposed. It is a well-known fact now, that, though there have been a few meritorious examples of intelligent good faith, the great bulk of the grants under the acts has been wasteful or fraudulent. In the language of a correspondent of the *Inter-Ocean*, "very few, if any, entering lands under the timber culture act, ever continue the culture after securing their lands, and after completing their proofs there is very little timber on the land that amounts to anything. They simply plant a few scrub cottonwood trees, and after acquiring the title to the lands, allow the fire to run through them, and that is the end of their timber culture."

And now, after all this, a new scheme is before Congress, called the "Dakota forestry bill," to be championed by Mr. Pettigrew, under which lands in Western Dakota are to be sold to planters of "twelve acres of timber," and so forth. It never occurs to the wise men who project these schemes that the planting of successful forests requires knowledge and skill, which not one farmer in a hundred is equal to, and that these twelve acre lots cannot possibly amount to anything of consequence, even though a few are successful in solving the great forestry problem.

But in truth it matters little, as we fancy, to the "ground floor" projectors of these schemes, whether any trees of consequence can by any possibility be made to grow in Western Dakota or not; for is there not to be a "commission of three, of whom two shall be practical (of course!) foresters?" and their huge salaries will go on from the passage of the act.

It is a great pity that there is not head enough somewhere to get forests of a few thousand acres apiece set out somewhere, with some such men as Douglas or Sargent to supervise the whole; and there would be little need of forestry commissions, whose only work is to write long-winded reports, which nobody has any patience to read after Congress has wasted thousands of dollars in publishing.

LOMBARDIAN MULBERRY TREES.—These are the latest kinds offered. It should be remembered by those engaged in silk culture experiments, that all these new names mean nothing more than mere varieties (and often barely that) of the common white mulberry. They are good enough in their way. So long as nothing extra is paid for the new name, people will not go wrong in buying the plants.

VALUABLE SEEDS.—Seeds of the most valuable varieties of Cinchona bring $1,000 per ounce in Ceylon. There are nearly 100,000 seeds in an ounce.

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

Observations on the Fertilization of Yucca, and on Structural and Anatomical Peculiarities in Pronuba and Prodoxus.*

BY C. V. RILEY.

This paper records some recent experiments and observations which establish, fully and conclusively, the fact that Pronuba is necessary to the fertilization of the capsular Yuccas. It describes for the first time how the pollen is gathered and collected by the female Pronuba. The act is as deliberate and wonderful as that of pollination. Going to the top of the stamens she stretches her tentacles to the utmost on the opposite side of the anther, presses the head down upon the pollen, and scrapes it together by a horizontal motion of her maxillæ. The head is then raised and the front legs are used to shape the grains into a pellet, the tentacles coiling and uncoiling meanwhile. She thus goes from one anther to another until she has a sufficiency. My observations confirm the accuracy of Dr. Geo. Engelmann's conclusion as to the impotence of the stigmatic apices in some of the Yuccas, and shows how the apparently contradictory experience of Mr. Meehan can be reconciled on variation in this respect in the species of the same genus. The exceptional self-fertilization in Yucca aloifolia—the only species in which it is recorded—is shown to be due to the fact that in the fruit of this species there is no style, the stigma being sessile, and the nectar abundant, filling and even bulging out of the shallow opening or tube. The flowers are always pendulous, and the pollen falling from the anthers can, under favorable circumstances, readily lodge on the nectar.

The irregularity in the fruit of the Yuccas—considered a characteristic by botanists—is proved by experiment to be due to the punctures of Pronuba.

The egg of Pronuba, which averages 1.5 mm. long, having a swollen apical end, and a long and variable pedicel, is passed into the ovarian cavity of the fruit. The puncture is made usually just below the middle of the pistil, on the deeper depression which marks the true dissepiment, or through the thinnest part of the wall. The horny

*Abstract of a paper read at the Montreal meeting of the A. A. A. S.

part of the ovipositor reaches the longitudinal cavity at the external base of the ovule, near the ferniculus, without, as a rule, penetrating or touching the ovule itself, and the delicate and extensile oviduct then conveys the egg for some distance (the length of six or eight seeds), along the cavity, the terminal portion of the oviduct being furnished with retrorse hairs which help to hold it in place during the act.

The paper concludes with some studies of the internal anatomy of Pronuba and Prodoxus.

[It is proper to say that Mr. Meehan never attempted to controvert Prof. Riley's observations. Mr. M. simply showed that what Prof. Riley had found true in Yucca filamentosa, did not occur and was not necessary in Yucca angustifolia. Unless it was assumed that what was true of one species ought to be true of all, there was nothing to reconcile. Mr. Meehan's observations were accurate in every particular, and exhibition of specimens to sustain his facts were made to the American Association in several successive years. Ed. G. M.]

ORIGIN OF THE PRAIRIES.

BY W. H. P., CHICAGO, ILLINOIS.

Reflections after reading the extract from the *Independent* in the January number of GARDENERS' MONTHLY.

If the companions and successors of the doughty Cortez, who penetrated to the interior of Mexico in search of the precious metals, had taken a course to the northeast instead of the northwest, many things would have turned out very unlike their present conditions.

One very probable result would have been that, in working their way along the great table-land of Mexico, and over the dry plains to the northwest, they would have adopted the style of building practiced by the aborigines of that region, and thus become accustomed to use earth and clay, burnt or unburnt, instead of the combustible materials the present North Americans use. And so, if they had in course of a hundred years or more (which they would have had before the French arrival), reached this locality, the city they would have built would have had no "Chicago fire."

They would also have had to cross thousands of miles of prairie, first arid enough and then of luxuriant verdure, with grass above the saddle-bow of the gallant "cabelleros," so that it would be quite natural for them to think that grassy plains constituted the greater part of the continent, and that it was made especially for horses and their riders. And then, when they found at last a limit to this state of things, they might have complained sadly that dense forests obstructed their way, and that provender for their steeds had failed, and all on account of that unnatural and unfortunate growth of trees and shrubs, which seemed to be reaching out long arms over the beautiful savannas, and threatening to cover them. They would probably have been disputing to this day about the "origin of the forests."

The emigrants from Northern and Western Europe (itself largely a region of woodlands), made their first settlements in a thickly wooded country, and wherever they traveled they found a boundless forest, through which the watercourses were the only means of travel. But by the way, according to the accounts of the earliest settlers, these forests were in many places entirely cleared of undergrowth by the intentional and persistent efforts of the Indians, who burnt them over every autumn, but did not destroy the forest. These same early settlers asserted, and geographers repeated for several generations, that North America may be considered in general as one vast forest. True, nowhere could vaster forests be found, but the geographer of the present day, remembering the vast plains of Northern Mexico, of Texas, and our Western Territories, as well as our "Prairie States," from Kansas to the British line, and the almost boundless plains of grass from thence to the Arctic Ocean, would hesitate before saying that the forest is the chief feature of North America.

Why then assume that the forest is the natural covering of our mother earth. Think of the vast regions of Siberia; of the great grassy plains from the Black Sea to farthest Tartary; of the pampas of South America. It would seem that grass is the material of the robe, and the forest trees are the trimmings of the same.

As you very well know, Mr. Editor, in certain soils, and with certain conditions of moisture, the tough and fibrous roots of the grasses will weaken, yea, exterminate both grove and orchard. The conclusion seems to be that man may break up the prairie grass, and may plant groves of forest trees, and with care and attention they will generally succeed. Or he may cut down the forest, and grub up the tree stumps, and with hard labor he will make good arable fields, and good pastures. Thousands of smiling farms testify to his industry and persistent care; but let him abandon his work, and in comparatively few years the soil will revert

to its original condition in the main. What was prairie of old will be groves once more, and the cleared farm will be forest again, as many, yes too many, of the New England farms have already done.

[The question of the origin of the prairies, and the origin of treeless prairies, must not be confounded.—Ed. G. M.]

CALADIUM ESCULENTUM, ALIAS TANYAH, ALIAS EDDOES.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

Although we are informed the Caladium esculentum was first introduced from tropical America in 1739, there nevertheless seems to be some uncertainty as to whether that part of the world is, in reality, its original home or not. One might naturally infer from its rank and wild abundance in various parts of Africa, where it appears to have flourished from time immemorial, to be indigenous there. The writer has not forgotten the immense area covered with Caladium esculentum, Cyperus, Ehrhartia, Agapanthus, Dracæna, Richardia, Sanseviera, &c., which luxuriate about the creeks, lagoons and lowlands on each side of the Orange and Limpopo rivers, in "the dark continent." Its vast quantities thereabouts, is too common to excite wonder, except to the stranger. I have forgotten, if I ever knew, by what name it is there known to the natives. But this much I know of it, that along the Gold and Slave Coast, in tropical Africa, where it grows from eight to ten feet high, the negroes eat it under the name of Eddoes. I also saw it in New South Wales, about the Darling river, and other parts of Australia, where it grew wild, as it does in Texas and Mexico. Again, I have seen the New Zealanders, as well as the inhabitants of Norfolk Island, where it seems to be equally at home, roasting it for food. As with the maize, it may be considered a traveling plant, and like it, only stops to settle where it finds the climate favorable.

EDITORIAL NOTES.

PLANTS OF THE CATSKILL MOUNTAINS.—Mr. Bicknell states that more than three hundred and twenty-five species, exclusive of vascular cryptograms, were observed by him during a summer visit to these mountains.

DOUBLE FLOWERS.—In some remarks on the Australian acroclinium, it was noted that what we popularly call a double flower may mean many distinct things. The most common manner of doubling is by the reversion of stamens to petals, though according to a strange notion recently started by Mr. Grant Allen, an English writer, we should say "advance of stamens to petals." The accepted doctrine is, however, that all the parts of a flower have advanced from leaves. A leaf

Double Begonia, "Hofgartner Vetter."

changes to a bract, a bract to calyx leaves, the sepals of the calyx to petals, the petals to stamens and the stamens to carpels. At least this is the successive order of development from the typical primary leaf. We have here an opportunity of giving an illustration of a Double Begonia, a new class of greenhouse flowers, which has attracted considerable attention in Europe. In this case the doubling appears to have been brought about by the retrogression of the stamens to petals. There are now several varieties of Double Begonias. This one is called "Hofgartner Vetter,' and was introduced by Haage & Schmidt, of Erfurt.

BOTTLING FRUIT.—A pretty surprise can often be prepared for children—even some children of considerable growth—by introducing a fruit in early life into a bottle, and then letting it finish its growth there. The little folks will wonder how it got there. By filling the bottle with alcohol, or possibly by excluding the air, the curiosity may be preserved for a long time. It is said that an apple in perfect preservation, although ninety-six years old, is in possession of a gentleman in Ulster county. As it rounded up from the blossom of the parent stem in the early summer of 1787, a bottle was drawn over it and attached to the branch, and after the apple had ripened the stem was severed

and the bottle sealed tightly. It looks as fresh as when first plucked.

HARDY CACTUSES.—Few people have any idea of the great pleasure to be derived from the culture of the hardy and half-hardy species of cactuses, of which there are numbers of marked forms in the southwest and Mexico. Many are entirely hardy here in Pennsylvania, but most are best kept just free from frost under protection during the winter. Their varied forms always give pleasure, but most of them have very beautiful flowers, and the watching for these is almost as enjoyable as the actual realization of their beauty. Though the flowering of such species seldom lasts more than a week, the different species come in succession, so that in a not very large collection some are open throughout the whole year. Last fall we received one for name through the mail, from Mr. A. L. Siler, of Hillsdale, Utah, who makes a specialty of collecting them. To-day, March 6th, it has its beautiful purple blossoms open in a cool greenhouse, and proves to be Echinocactus Whipplei. Next week Echinocactus polyancistrus, from the same collector, will be open. The following week Echinocactus Uncinnatus, sent us by Vasey, from New Mexico, will about be open, so that these three species alone give us flowers to admire extending over nearly a month. The mail is a cheap way of sending specimens to the editor, who is glad to name these cactuses for friends when he can. In packing, a tin can or cigar box is best, as the spines, pushed back into the plant, cause rotting.

SCRAPS AND QUERIES.

NYMPHÆA STURTEVANTII.—Mr. Sturtevant remarks: "In your note in the February number of the GARDENERS' MONTHLY, you say that N. Sturtevantii is lighter in color than the parent. If you will kindly read the article in the *Country Gentleman* again you will see that it was not so stated there."

NYMPHÆA FLAVA.—"B. J." says: "I see that the yellow water lily of Florida is regarded as something new. I believe I have seen it in years past, and supposed every observing person had noticed them. How is it that it is only just found out to be new?"

[Botanists do not regard it as "new." Long ago it was named. Modern botanists had not seen it, and though it has been several times referred to—often for anything we know—by popular writers, botanists, with commendable caution, thought it just possible that the Yellow Nuphar or "Splatter Dock," was mistaken for it. Now we know there is a true yellow Nymphæa in Florida, and read again what the popular writers say; it is a wonder that more credence was not given to what they said. Mayne Reid, for instance, so faithfully describes it in "Osceola," that there was little room for mistake. But then you know it is very easy to be wise after the fact.—Ed. G. M.]

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

DESULTORY NOTES ON THE DOG ROSE.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

It is difficult to determine with any certainty, at this late time, what plant Milton had in view when he said:

> ——"In spite of sorrow
> At my window bid good morrow,
> Through the sweetbriar, or the vine,
> Or the twisted eglantine."

Whatever it was, it seems evident from his language it was not the Rosa rubiginosa, as he alludes to that well-known shrub, under its familiar English name, sweetbriar.

Query. Did he mean by "twisted eglantine" the sweetbriar, as some will have it, or was it the dog rose, R. canina, as Mr. Meehan, with good reason, alleges is its proper name? The idea conveyed to the reader's mind from the quotation is this, that the sweetbriar and eglantine are two distinct plants, and not "one and the same thing," as they are generally understood to be.

Shakspeare also presents the same difficulty, in the following couplet:

> "Quite overcanopied with lush woodbine,
> With sweet musk roses and with eglantine."

That the "immortal bard" would often see and pleasantly recognize the poetical woodbine and eglantine, growing wildly about the banks of "the soft-flowing Avon," meadows, copses and hedge-

rows, which then "over-canopied" the green lanes and country roads about Stratford-upon-Avon in his time, is most natural. And indicative of his intense love for the picturesque scenes around him, he thus tenderly refers to a delightful spot, "I know a bank whereon the wild thyme blows;" and on which imagination may plainly picture him seated, side by side, with his "heart's desire," Ann Hathaway, happy in the enjoyment of each other's sweet company, as they lovingly lingered beneath the "hedge-elms," dog roses, hazel bushes and hawthorns, which gave such a charm to the rural landscape, and beautifully "over-canopied" the primrose and violet-scented pathways which led to love's Elysian, the cottage of his betrothed, where dwelt the fair Ann.

Admitting the poet's thorough acquaintance with nature, and his undoubted knowledge of the simple nomenclature of the trees and flowers, by which they were then known, we, at this day, are nevertheless left in doubt as to whether his eglantine was the sweet briar or dog rose. And yet we may justly infer from the rambling or spreading habit of the latter, which is wont to rampantly overtop bushes of lower growth, and thus, while "over-canopying" the narrow country roads and pathways he musingly trode, was what he meant. The sweet briar, though a loose, straggling bush, often met with in wild, uncultivated places, is not exactly the kind likely to have "over-canopied" the wise and meditative man in his quiet rambles along his native ferny lanes, in beautiful Warwickshire.

The late Robert Buist, one of the most practical men of his day, writes the sweet briar and eglantine as synonyms. And in his "Rose Manual" says "the eglantine has been the theme of poets and lovers for many centuries." True, it has, and probably will be, for many more to come; or "as long as men love maids and maids love men," without ever once considering whether its name is botanically correct or not.

I believe no one is more anxious to arrive at facts than the editor of this magazine, who is ever ready to impale with his iconoclastic pen the most fondly cherished idol, no matter how long its faithful votaries may have innocently worshiped it as the symbol of truth, whenever he discovers the delusion. And, possibly, the old eglantine fetich will not be the last one to explode and expire from the prick of his pungent pen.

[In these questions great men may be mistaken, as they sometimes surely are. Burns makes the nightingale's notes heard in Scotland, but it is doubtful whether a nightingale ever crossed the Roman wall. The writer of this had as good an opportunity as ever Shakspeare or Milton had of being acquainted with the common people and the common names of plants, and it is chiefly this, joined with the French usage of this French name, which leads to the belief that some author mistakes the plant.—Ed. G. M.]

HISTORY OF THE POTATO.

BY L. J. TEMPLIN, HUTCHINSON, KANSAS.

The common potato was unknown to the inhabitants of the eastern continent till after the discovery of America by Columbus. The potato known to the ancients, and that is spoken of by Shakspeare and other English writers, was not the common potato, but it was the sweet potato, Convolvulus Batata. The early history of the potato is involved in considerable obscurity, as the references to it by the historians of those times are quite meager and somewhat contradictory. A careful collation and sifting of the various references to this subject seem to justify the following statements: The first reference we find to the potato in connection with European history is related to the first voyage of Columbus. When on the island of Cuba some of his men visited the interior of that island and there discovered maize and a root that was used for food, and that was doubtless the potato. On visiting the continent of South America, European adventurers and travelers found the potato growing both in the forests and in cultivation. The wild potato was found growing in the Andean forests from New Grenada on the north to Buenos Ayres on the south. And it is now known to be abundant as far north as New Mexico, in the United States, where it is a common and important article of diet with the Indians of that region. Humboldt does not seem to have been successful in finding the potato growing indigenously in some portions of the country where others assert that it was found. He says that "the potato is not indigenous to Peru, and that it is nowhere to be found wild in the Cordilleras situated under the tropics. M. Bompland and myself herborized in the back and in the declivity of the Andes, from the 5° north to the 12° south, and informed ourselves from persons who have examined this chain of colossal mountains as far as the Le Pau and Oruro, and we ascertained that in this vast extent of ground no species of solanum with nutritive roots vegetates spontaneously. It is true there are places not very accessible, and very cold, which the natives call

'Parana de las Papas.'" But it seems that though these distinguished naturalists did not succeed in finding the wild potato growing in these regions, others were more fortunate. Meyer states that "if the potato had migrated from Chili to Peru it would probably have retained its Chilian name; but this conjecture is no longer necessary, for it grows wild in both countries. I myself have found it in two different places in the Cordilleras of these countries."

Hooker* states that Don Jose Pavon, in a letter to M. Lamhert, says that Solanum tuberosum grows wild in the environs of Lima and fourteen miles from Lima, on the coast, and I myself have found it in the kingdom of Chili. And M. Lamhert adds, "I have lately received from M. Pavon very fine wild specimens of Solanum tuberosum collected by himself in Peru. In Chili it is generally found in steep, rocky places, where it could never have been cultivated, and where its introduction must have been almost impossible. It is very common about Valparaiso, and Cruikshank has noticed it along the coast for fifteen leagues to the northward of that port; how much further it may extend north or south, he knows not." Mr. Caldcleugh, of Rio Janeiro, in sending some tubers of the wild potato to the secretary of the London Horticultural Society, writes as follows: "It is with no small degree of pleasure that I am enabled to send you some specimens of Solanum tuberosum, or native wild potato of South America. It is found growing in considerable quantities in ravines in the immediate neighborhood of Valparaiso, on the western side of South America, in latitude 34½° south. The leaves and flowers of the plant are similar in every respect to those cultivated in England and elsewhere. It begins to flower in October, and is not very prolific. The roots are small, and of a bitterish taste, some with red and others with yellowish skins. I am inclined to think that this plant grows on a large extent of the coast, for in the south of Chili it is found, and is called by the natives maglia, but I cannot discover that it is employed for any purpose."

The mountain of Chancay is mentioned by Jenin and Pavon as a locality where the potato is to be found in a wild state.

From the foregoing it appears the native habitat of the potato is found in the valleys of the Andes mountains and the table lands bordering on the Pacific, several species extending as far north as New Mexico. But the potato was found by the European explorers not only growing wild, but it was also found in cultivation in a highly improved state. It has been in cultivation by the old Aztec race from time immemorial. At Cuzco in Peru, Quito in Equador, and perhaps as far north as Mexico, it had formed an important article of diet to the aboriginal inhabitants of America long before the discovery of that country by Europeans. The varieties in cultivation were far superior to the wild varieties, these last being quite bitter and unpalatable, while the cultivated varieties possessed considerable excellence.

At just what period the potato was first carried to Europe we are not informed. Spanish adventurers doubtless carried it to that country at quite an early day. Certain it is that it was cultivated in Spain as early as 1550. From there it soon made its way to Italy, Burgundy and the Netherlands. It was, however, early introduced into Italy, directly from South America. The early Spanish and Portuguese adventurers being zealous papists it is probable this new esculent was very early sent to Rome as a present to the Pope.

There seems to be a conflict of opinion in regard to the introduction of the potato into Ireland. One account credits its introduction into that country to a Capt. Hawkins, a slave trader, who, it is said, carried it from Spain in 1565. But Sir Robt. Southwell stated before the Fellows of the Royal Society that his grandfather had introduced it directly from Raleigh. Again, the Irish have a tradition that it was brought to their country from France by a Catholic priest. The potato was introduced into England by Sir Francis Drake on his return from a voyage to the Pacific Ocean in 1565. On his way home he touched at the Virginia coast, and carried away the discouraged colonists from that place. Whether he obtained it on the west coast of America or from the colonists in Virginia we are left to conjecture.

Sir Walter Raleigh is credited with introducing the potato into England from Virginia in 1586. Some authorities however place it as late as the year 1623. A somewhat careful examination has raised quite strong doubts in my mind whether this is correct. Raleigh, it appears, did not visit Virginia himself at all, but merely furnished ships and provisions, and sent others out. The return of Sir Francis Drake with the colonists from Virginia, seems to have been the only chance for the introduction of the potato about that time. In 1589, Raleigh disposed of his interest in the new world, and from that time we have no evidence

*Botanical Miscellany.

that he gave any attention to colonial matters. To my mind the more plausible theory is that he received some of the tubers that Drake had brought from his southwestern voyage, and having cultivated them one year, introduced them to the public as a product of the new country in which he was at that time greatly interested. Again there does not appear any evidence that the potato was to be found in Virginia at that time. It is not indigenous to that country, and if found there at all it must have been procured from Europe, which is contrary to both history and the requirements of the case.

Peter Cieca, in his "Chronicle," printed in 1553, says that the inhabitants of Quito had, besides mays, a tuberous root which they called papas, and which was an article of diet with them. Clusius, a botanist of Vienna, supposed this to be the potato, specimens of which he had received both from South America and from Flanders. Thomas Henriot, a mathematician, describes the potato of Raleigh as follows: "These roots are round, some as large as a walnut, others much larger; they grow in damp soil, many hanging together, as if fixed on ropes; they are good for food either boiled or roasted." The first figure of the potato was given by Gerarde, in his "Herbal" in 1597. He calls it the Batata Virginiana. He states that "the root is thick, fat, tuberous, not much differing in shape, color and taste from the common potato, save that the roots hereof are not so great nor long; some of them are as a ball, some oval or egg-fashioned, some larger, some shorter, the which knobby roots are fastened into the stalks with an infinite number of thready strings. It groweth naturally in America, where it was first discovered, as report says, by Columbus, since which time I have received roots hereof from Virginia, otherwise called Nurenbega, which grow and prosper in my garden as in their own country. The Indians do call this plant 'pappas,' meaning 'the roots,' by which name also the common potatoes are called in those Indian countries. We have the name proper to it mentioned in the title, because it hath not only the shape and proportion of potatoes, but also the pleasant taste and virtues of the same, we may call it in English, 'potatoes of America or Virginia.'"

What is here called the "common potato," was the sweet potato, which was the root in common use previous to 1600. This was the plant alluded to by Shakspeare in the "Merry Wives of Windsor," where Falstaff is made to say, "Let it rain potatoes, and hail kissing comforts." Gerard speaks of the round potato as a great delicacy, and recommends that it be eaten as such, and not as a common dish. In 1630, Parkinson published a figure of the potato along with other roots that were eaten. It seems to have been quite rare in England for many years after its introduction. So little attention was given to this plant that it is not mentioned by Loudon and Wise in the edition of their "Complete Gardener," published in 1719. Bradley, who wrote on horticulture about the same time, says that: "The potato is of less note than horse radish, radish scorganers, beets, and skerret." During the reign of James I. they were furnished to the royal table at two shillings per pound. And during the succeeding reign, and the Commonwealth, the potato continued very scarce and high in price. So slowly did it come into use that it was only toward the close of the eighteenth century that it came into common use. Hence we find that in Essex County in 1796, 1,700 acres were planted to supply the London market.

The potato made its way to Scotland in 1728, where it met with considerable opposition on religious grounds, because "the potato is not mentioned in the Bible." But a severe season in 1742, proved the value of this tuber for food, and so stimulated its culture that it soon became a common and reliable article of diet.

It was introduced into Germany in 1710. The government took quite an interest in its introduction, and in some parts of the country used compulsion to promote its cultivation. France received the potato about the same time that it was taken to Germany, but it seems to have met with quite strong opposition, having been pronounced poisonous by the National College of Physicians. One Parmentier, was instrumental in making it popular in that country. He first saw it as he returned from the siege of Mayence. He studied its cultivation in Germany, and on returning to France he entered upon the task of educating his countrymen in a knowledge of the value of this esculent. He exerted himself by every means in his power to attract the attention of the public to the merits of the potato as an article of food. It is true he overestimated its value, believing that it was equal to wheat. But he had not taken account of the value of gluten in wheat that had been discovered in 1727 by Becècaria. In order to overcome the prejudices of the people he wrote and spoke in its favor, recommending it to the poor as a cheap food product. He planted a field of potatoes, and, in order to impress the peasantry with its importance, he had it guarded by gendarmes, giving out

that it was a very valuable food product. In a short time the guard were ordered to relax their vigilance. Some potatoes were stolen by the peasants, others followed, and finally the whole crop was disseminated among the people of the adjacent villages, and its excellence proved to be so great as to remove all the prejudice in regard to the tuber as an article of diet. Parmentier also secured the attention of the nobility to the value of the potato. On one occasion he appeared in the presence of Louis XIV. with a nosegay of the flower of the potato. The king inquired in regard to the plant, and was easily persuaded to introduce its cultivation into the royal gardens. The example of the sovereign was imitated by the courtiers, its popularity was thus secured.

Notwithstanding the efforts of those who appreciated it, the potato grew in favor very slowly, and did not become generally popular with all classes till the beginning of the present century. But when its merits were fully understood it soon became one of the most important food crops in cultivation. Such was the dependence of some of the people of Europe on the crop that when the rot appeared and destroyed the crop, it left the people in a destitute condition.

The destruction of the old varieties by this malady led to experiments in the production of new varieties to take the place of those that had seemingly lost their vigor. Mr. Goodrich took the lead in the production of varieties from the seed of the wild varieties. Though his success was not eminent he laid the foundation for improvements that have resulted in the production of hundreds of new varieties, many of them of very superior excellence.

EDITORIAL NOTES.

DANGERS OF PLANT COLLECTORS.—When admiring the great beauty of some rare plant, we seldom think of the dangers and sufferings which those often have to undergo who go forth into the wilds in distant parts of the world to gather these treasures for us. Mr. Maries went into China to collect for Messrs. Veitch & Son, of Chelsea, near London. One hot day he fell under a sunstroke, and obtained leave from some priests to live in the Yellow Dragon temple.

"It was a new place, and although newly built was beginning to tumble down and look old. Three fine gilt images were inside, and the same drum, bell and triangle trio were played at sunrise and sunset, all the prayers consisting of a single bow to the images, the priests being most ignorant men. They treated me very well, but I had a suspicion they were more robbers than priests, particularly when I left; I did not give them enough money, and they laid hold of my baggage, and not till I produced my revolver would they let me take my things. The whole time I was there I was afraid they would make an attempt to rob me. The first night I stayed in this temple I could not sleep, and I heard people about the whole time. The second day I went over the range of mountains to the side of the Poyang Lake, and I was fully repaid with the splendid scenery. After walking for about a mile I passed over a swamp with nothing but coarse grass and a large green Calanthe (?) growing in clumps 2 feet and 3 feet through and 5 feet high. It was growing by the streams that ran through the swamp; all the shrubs had been burnt the year before, and scarcely the remains of a bush could be seen. After this walk I returned to the temple very tired, only having collected a few plants of a very fine Niphobolus. Near the temple I noticed one very fine Deutzia and some Weigelas having several colored flowers. My second night in the temple was spent without sleep, and I was quite worn out, so in the morning I set out for the bungalow again. I walked to the Chinese village at the foot of the hills, where I was fortunate enough to get a chair from the priests at a temple there and was carried to the bungalow, where I met a lot of old English friends from Kuikiang."

WARFARE ON DAISIES.—The Pennsylvania Legislature had an act before it this winter making it unlawful for any one to grow "daisies." When the bill came up no one knew what "daisies" were. Yet whoever felt aggrieved that his neighbor grew "daisies" was to have authority to enter his neighbor's grounds without liability for trespass or damage, and destroy them. Fancy the laughter of the "daisies" at an act like this.

MR. V. DE NIEDMAN.—We are pleased to note that our well-known botanical and horticultural correspondent, Mr. Niedman, has graduated in pharmacy in the Medical Department of Howard University at Washington.

PLEASURES OF CAMPING LIFE.—According to the *Contributor*, of Salt Lake City, the pleasures of camping out are very varied.

"It was six years ago, and in the beautiful month of July. A party of us, all young men, were passing through Blacksmith's Fork Canyon, on our way to Bear Lake Valley and Soda Springs. All day the sun had scorched our faces, ears and backs, only when, peradventure, we halted for a few minutes in the birch or willow arbors that fringed the roadway; until now, as we entered a small oval, formed by the receding mountains, his face was suddenly lost behind a projecting spur, around which the road trended. Here it was de-

cided to camp for the night, and the wagon being drawn to a little eminence that commanded a view of the whole opening, the horses were unhitched, and that hurry and bustle so dependent upon camp life suddenly commenced. One devoted his attention to the team, which being unharnessed, was hobbled and turned up the mountain side. Another busied himself in preparation for supper, being voted the best cook in our company. One gathered and broke sticks wherewith to build a fire. Another penetrated to a cold spring near by and became 'water carrier.'

"Have you ever noticed how sudden the change is from daylight to dark, among the mountains? We had scarcely thrown ourselves upon the buffalo robes before our camp fire, when the sunlight faded from the mountain tops, and a heavy gloom spread over the little valley. A cold wind immediately swept through the canyon, which soon gave place to mellower breezes from the pines. We sat silent for some time, watching the changes from gloaming to night. In a few minutes here and there a star appeared, trembling above the mountain, and in less time than one could note it, the whole heavens were

> 'Bespangled with those isles of light,
> So wildly, spiritually bright.'

"The moon had not yet risen, but in the east a paling had begun, giving to that portion of the sky a melancholy ethereal aspect. Behind us were the mountains, grim and frowning; on our right, the river, with its dark underbrush, and an occasional pine hanging upon its brink; in front lay the little valley, stretching darkly away into the gloom where to-morrow's journey lay. Scarcely a sound broke the monotony of this scene. Occasionally a night bird whirred overhead with a strange, rushing noise that made the silence deepen more intensely afterward. The roaring of the river came up dull, and as though far off, making a ground upon which more dissimilar noises could be distinctly heard. But over all there was a spirit of solitude—of intense solemnity—that produced a sensation of humility and veneration approaching fear.

"After supper, our beds were spread between two clumps of shrubbery, around which the wheat grass grew tall and luxuriant. It was not without some misgivings as to the near proximity of reptiles that I threw myself wearedly upon the dusty quilts; in fact, before doing so, I had beat the bushes and grass in our vicinity for the purpose of driving them out, if any were near.

"Awaking in the night, without having the power to utter a word or make a movement, I now became conscious that I was lying in bed, and that something was pressing upon and moving about me. It touched my feet, my legs and body, much as we see a dog touch and smell anything it has found, but with a far more horrifying effect. Possessing no power of volition, I felt its clammy flesh upon my body, and shivered—a deathly, fearful shiver—that chilled me to the heart. I realized that a snake was in my bed—that it was gliding slowly but surely over my breast, and would soon be upon my face; yet, though I tried to struggle—to scream out, my efforts were powerless. At last, when it seemed that the serpent's breath was upon my neck, and its forked tongue about to dart upon me, I gave a loud shriek, and bounded madly to my feet. For an instant my whole desire was to fly as far as possible from the detestable spot; but my companions, half terrified, were now around me, and realizing at once the cause of my fright, caught and restrained me.

"The moon had risen, and by its pale light, two or three dark objects were seen gliding from the place where I had so lately lain. F——, one of the best marksmen with a pistol in the Territory, shot two of them as they were passing from the quilts into the grass. Upon examination, they proved to be rattlesnakes, each with eight or ten rattles. At sight of them I could not sufficiently express my gratitude for so wonderful a deliverance."

VEITCH'S MANUAL OF CONIFERÆ.—A distinguished author, writing to us about this work, pronounces it the best monograph of coniferæ with which he is acquainted. We are glad to know hat this excellent treatise on the pine family is soon to be placed in the American book trade, where it may be readily obtainable by book buyers.

ARTHUR BRYANT.—Horticulture—especially Western horticulture—mourns the loss of this distinguished pioneer, although he had passed the allotted term of human life. His death occurred at his home at Princeton, Illinois, on the 6th of February. When he first settled there the country was a bleak wilderness, and there were scientific men not a few who, finding no trees on the prairies, gave abundant reasons why it was impossible that arborescent vegetation should ever grow there. It was for men like Bryant to show the possibilities of the impossible, and to-day, by his courage and labors, and those of his contemporaries, we have forgotten the prophecies which made experiment foolishness. He issued a work

finally which told not only how to raise forest trees in that part of the world for shelter and ornament, but for profit also. He was brother of the great poet, and, like him, had a keen sensibility to the voice of nature, with whom he held close communion in all her various forms, especially in connection with plants and flowers.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

"THE DIAMOND TUBEROSE" REPLY.—Nanz & Neuner, Louisville, Ky., write: "In answer to that covered attack in your February number about our new seedling tuberose, 'Diamond,' we pronounce the same false in every particular.

"1. Over one-half of our saleable first-quality bulbs has been sold in this country, and we still have orders ahead which we are unable to fill with extra large bulbs.

"2. We offered this Diamond tuberose to over eight hundred American florists. Please notice enclosed wholesale circular, which was mailed to the trade in September.

"3. But one house handles our tuberose in Europe, and strange to say, does not reside in France. Nor do we think it will restrict its sale to France or any one part of Europe.

"4. The price we charge is but a trifle higher than that of the Pearl tuberose, as everybody could see in last advertisement in GARDENERS' MONTHLY. We never charged fancy prices.

"5. The European house had over five hundred bulbs of this tuberose in bloom, was satisfied as to its earliness, &c., and ordered accordingly.

"Our D. Tuberose is a seedling of the single one, which every one knows is fully two to three weeks earlier than the Pearl or Double Italian. It has inherited this earliness, and resembles in growth neither the Pearl nor the Italian, but the single. The true D. Tuberose has also the good quality of being dwarfer than the pearl; but we do not hesitate to state that our tuberose is defective to some extent as regards its evenness in height, but we are fully confident to overcome this defect in a few years. In the meanwhile we recommend it only as a forcing tuberose, which by its earliness alone will more than repay for the little extra price asked for same.

"By introducing none but first-class novelties, from the White Crape Myrtle, &c., down to our perpetual blooming Bouvardia, B. rosea multiflora, and now our double red one, all sent out by us, and all which are going to stay, we have acquired a fair, but, we think, well-deserved business reputation, which we will not be slow to defend against malicious attacks."

[We admit this communication, under our usual rule of risking an error on the side of fair play, if we are to err at all. But to our mind we should have been justified in declining its insertion, as it does not meet the points stated, and the indignation against "covered attacks" and "malicious attacks" is thrown away by the writers.

In reference to point one, we have to insist that our first statement was made on the strength of a letter dated December 7, 1882, addressed to a responsible nurseryman, signed Nanz & Neuner, and from which we quote as follows: "The orders for export have been so large that we have sold nearly all our whole stock of Diamond Tuberose to France and Germany." N. & N. now say this is not true; that "over one-half has been sold in this country." If this is "false in every particular," Nanz & Neuner of December 14th must settle the matter with Nanz & Neuner of December 7th.

The point about the price is of no consequence. No one objects to a "fancy" price for a new thing; but if the thing is old under the pretence of being new, it is another matter. Nor is it material that the purchaser is satisfied. If they have not seen the Pearl it is only another illustration that where "ignorance is bliss," &c.

The real point at issue is simply this; After our notice of it last season, we had many letters from responsible parties, giving us their reason for believing that the Diamond tuberose was in no way distinct from the Pearl. On the strength of the announcement that the introducers intended to give doubters an opportunity to judge of this matter another year, we thought it but fair to Nanz & Neuner not to publish these letters. We have not been given this opportunity, nor do we know of any one who has, and we are therefore compelled to say that on the authority of very good evidence submitted to us, we believe there is no difference between the Diamond and the Pearl.

This must close this controversy for the present. —Ed. G. M.]

A GRAMMATICAL QUERY.—"Young Gardener" says: "I notice that the GARDENERS' MONTHLY

interests itself in a wide range of intelligent topics. I therefore make no apology for inquiring whether a recent writer who used 'two waterpotfulls of liquid' would not have done better if he had said "two waterpots full?'"

[The English grammar is peculiar in this, that it is founded on the meanings of words, rather than on the words themselves. For instance, the genders are constructed on the sexes of the creatures we talk about, and not on the mere form of a word as in some languages; hence we can oftener get at the correct form of the words desired by studying what we mean to say, than by following merely the rules of the schools. Again, for instance, we say "I should hate to be a man like him," or "I should hate to be a man like he," with equal propriety according to what we mean by "like." The last seems harsh, and would hardly be tolerated in school, but if we put its equivalent, "such as," in its place, and say "I should hate to be such a man as he is," you see it is correct. Further, the schools tell us to say "two and two are four," and that "two and two is four," is shocking. If we mean that two articles and two other articles make four articles, "two and two are four" is correct; but if we mean to ask the sum total of the figures 2 and 2, that sum total "is" 4.

Now for the two waterpots full. This would be the form with those who feel that our language should go by rule and not by sense. It is the common form with scholastic people. But the person who uses it is not referring so much to the water pot, or whether it is exactly full or not; but he wants to convey the idea of a definite quantity. Full is used in the sense of a "filling." You are to use the filling of a cup, pot or hand—or two "fillings" or "fulls" of these. Indeed, we do not use the two words "waterpot fulls or hand fulls," but make one word to represent a measure or quantity—waterpotfuls or handfuls.

If one does not care to be criticised for his belief, however, it is fortunate that the English language is so elastic that he can change the whole form of the sentence, and still be right.—Ed. G. M.]

MISTAKES.—Correspondents of American magazines look sharp after the errors they detect, and if even a letter is misplaced the editor is sure to hear of it. It has come to be considered as a sign of a very accurate serial when corrections are frequently in order. Only those which dare criticisms correct errors. European papers seldom do it. In an English paper before us we are told that the "Duke of Newcastle is going in the spring to the Western States of San Francisco." If an American writer made such a geographical slip in regard to a European country he would never hear the last of it from his readers.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

FERTILIZING MOSS—THE NEW YORK HORTICULTURAL SOCIETY.—The subject of the cultivation of plants in fertilized moss having created considerable interest during the past year, and with a view to determine, if possible, the relative value of soil as a medium of cultivation compared with fertilized moss, especially that known as Dumesnil Moss, the following premiums are offered to be competed for at the June meeting (to be held in Horticultural Hall about June 15th) under the following conditions, for the best twelve plants grown in Dumesnil or other fertilized moss, consisting of 4 Abutilon, Snow Storm; 4 Geranium (double), General Grant or Wonderful; 4 Coleus, Verschaffelti. First premium, $15; second premium, $10. Plants to be placed in the moss not later than March 1st from cuttings or a two-inch pot, and thereafter watered with pure water only. To be exhibited in pots not over five inches, accompanied with a statement of the material used for growing. JAMES Y. MURKLAND, Sec'y.

PENNSYLVANIA HORTICULTURAL SOCIETY.—In view of the meeting of the American Pomological Society in Philadelphia this coming September, the horticulturists are making unusual efforts to render the visits of the pomologists profitable and attractive. Endeavors are being made to get an excellent horticultural exhibit. The florists of Philadelphia have subscribed $1,000 to offer as premiums. The cut flower department of the exhibition alone, it is believed, will be worth coming to Philadelphia to see.

G. Severeyns. Chromolith. Brussels

EW TEA ROSE „ANDRÉ SCHWARTZ" THE „TRUE TEA JACK"

GARDEN

HOR

DEDICATED TO

[illegible]

[illegible] XXV. [illegible]

FLOWER G[illegible]

[illegible]

RANDOM [illegible]

BY [illegible]

[illegible]
[illegible]
[illegible]

THE
GARDENERS' MONTHLY
AND
HORTICULTURIST.
DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

VOLUME XXV. MAY, 1883. NUMBER 293.

FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

RANDOM JOTTINGS.

BY MRS. R. B. EDSON.

I have made a great discovery, and a somewhat disheartening one, and this is it: It isn't quite safe to believe everything those very fascinating and altogether delightful creatures, the flower catalogues, say. I mean absolutely and implicitly, you know; something you would be willing to swear by—not about, if you were profanely disposed.

Now, I admire catalogues, and always read them from preface to finis. They have a fascination about them before which the most entrancing novel "pales its ineffectual fires." Their charm, like the wonderful marvel of creation, is new every spring. I confidently expect to go on reading them with ever fresh delight, to the end of the chapter, and of believing them, in a general way, but not specifically. For instance: What catalogue tells the unsophisticated reader of the disappointing, not to say exasperating, habit of Yucca filamentosa? It is very beautiful in flower, I admit. It ought to be, after you have waited two years—the usual time for a purchased plant—for the gratification. It is barely possible you may have a like gratification the following year, but the great probability is that when you are asked by all your friends if "that plant which bore such beautiful white flowers is dead?" (you secretly wish it was) you are forced to point to a mass of shabby leaves, about which are a few shoots and off-shoots, which you have learned by experience will take two or three years more of waiting. They are all very well for large grounds, or to be planted among shrubbery, but if, in your confiding innocence (as somebody who shall be nameless, once was), you are led to plant them in a choice and sightly position, woe is you, for a more exasperating and unsightly mass would be hard to find.

And then there is the whole tribe of Clarkia, Nemophila, Leptosiphon and Godetia, which for general cultivation are utterly worthless. "In a land"—or a garden—"that the sun shines on" they are about as big a delusion as can be found.

But my pet grievance just now is the new (?) Salvia Bethelli. It is in all the catalogues, and is much praised as "a dwarf plant, with very showy pink flowers." I yielded to the seductive description, and bought one. Dwarf? Well, it depends upon what one compares it with. If, for instance, you were comparing it to the "big trees" of California, this Salvia might be fairly considered dwarf, but not otherwise.

Mine grew to between three and four feet in height before it gave a hint of flowering. It is very long-jointed—some four inches or more—and

is as like, in both leaf and flower, to the old pink Salvia of ten or fifteen or more years ago as two peas. The flowers drop so quickly that there is never enough open at a time to make the plant at all ornamental. But the red spider thought it the most charming plant that ever grew, and came in regiments from all the region round about, and pre-empted homesteads, and increased and multiplied to an extent that was fairly alarming. Showering and washing made no perceptible difference, and so one day Salvia Bethelli and I took a walk in a lonely place under the trees, and S. B. never came back! Possibly I didn't have the "true" sort.

Mr. H. B. Ellwanger, in his very useful book, "The Rose," devotes a chapter to "too much alike roses." I think this will apply to many other plants beside roses, and noticeably to geraniums. I bought last spring three pink sorts, each claiming to be very "distinct," and, so far as the flowers were concerned, there was not the faintest perceptible difference, and they were also just like an old sort I already had, save a slight difference in the zoning of the leaf.

I grew and flowered very successfully Clianthus Dampierii in the open ground last summer. The seeds were sown in March, in small pots, in soil two-thirds of which was clean sand. They were kept in an ordinary living room till May, when the pots were broken and they were set in the open ground in a dry, sunny place. They grew finely through the rainy weather which prevailed in June. Early in July the drought set in, and was more severe than anything experienced in New England for many years. Ah, thought I, what a splendid season for the Clianthus to flourish! And so, while watering other plants, I was mindful of the directions, "never water," and looked to see it run wild with delight and luxuriance. But it did nothing of the sort; it just stood still. It had by the 20th of July a number of clusters of flowers, and buds at the axil of every branch, and nearly every leaf. Soon the buds began to turn yellow and blast, and one hot evening I found the whole plant limp and wilted. I threw "directions" to the wind, and from that time on watered it copiously every night, and the way it branched and ran rampant over everything was altogether astonishing, for a plant that had the reputation of "never drinking." After the September rains it grew even more luxuriantly, and when finally killed by the frost the last of October, had still many buds on it. The glass went down to 20° Fahrenheit several times before it succumbed. It is much hardier than I had supposed.

I am much pleased with Canna President Faivre for room decoration as a winter window plant. The foliage is of very fine form, measuring five inches in breadth to fifteen in length, and is a rich shade of bronzy red-purple. It is fully as effective as the best Dracænas, and is much more easily and quickly grown.

I have reserved the rankest bit of heresy of all, for the closing paragraph in these jottings. I really shouldn't dare write another, for I am aware that I am in a fearful minority, but I am going to ask, nevertheless, in all meekness and humility, that the various writers and catalogue makers put a foot-note at the bottom of their glowing descriptions of Hydrangea paniculata grandiflora, which shall read something in this wise:

"The flowers of this magnificent, unequaled and altogether unapproachable shrub soon fade to a dingy, dirty pink, in which condition it is, without exception, the most disreputable looking plant in cultivation."

There! it is said. Now let the axe fall.

STAPHYLEA BUMALDA.

BY JOHN F. CLARK, PHILADELPHIA.

This handsome shrub belongs to the natural order Sapindaceæ. It is a native of Japan. Although it was introduced several years ago, it is yet seldom met with; but there is no collection complete without it. A few years ago the writer saw a noble specimen of it, fifteen to eighteen feet high, in full bloom, with hundreds of flowers on it. The blooms are a creamy white and deliciously fragrant. The flowers are racemose, terminal, fruit large, three-celled, inflated like a bladder, but rarely perfecting more than two or three seeds. It is perfectly hardy in this latitude. It may be increased by layers, and I have no doubt would do well grafted on the American variety, S. trifolia.

THE TRUE EGYPTIAN LOTUS HARDY.

BY E. D. STURTEVANT, BORDENTOWN, N. J.

Following Mr. Pollock's communication in the December number of the MONTHLY, you state that Mr. Cope flowered the real Egyptian lotus, Nelumbium speciosum, in the open air, by first starting the plant under glass. I have cultivated this plant for the last four or five years, and have proved beyond a doubt that it is perfectly hardy in this climate.

For three winters it has stood the test without the slightest injury underneath ice six inches thick.

I have it naturalized in one corner of a mill-pond, where, could you have visited me last summer, I could have shown you a bit of Nile scenery consisting of a fine bed of this ancient plant, with abundance of noble leaves from one to two feet in diameter; one hundred buds in all stages of development, and twenty expanded flowers at one time. Nelumbium luteum is a beautiful plant, and well worth cultivating, but N. speciosum is in every way much more desirable. I find it much easier to transplant and establish. It grows more rapidly and flowers more freely than N. luteum. It will flower the first season it is planted, which is seldom the case with N. luteum. With me it begins to bloom early in July, and produces a constant succession of flowers until late in October. At least this is the case as grown in my largest artificial basin, where last summer it produced (entirely without artificial heat) some leaves thirty inches across on foot-stalks five and six feet in length, and flower-stalks the same length as the latter, one, however, measuring seven feet.

Many of the flowers were eleven and twelve inches across when fully expanded, and one measured thirteen inches from tip to tip of petals. The first day the flowers appear like gigantic tea rose buds of a bright rose color. The second day they open like a tulip, the base of the petals being creamy white, beautifully shaded off into bright pink. The third day the flower opens more broadly, and is still lighter in color. They are also delightfully fragrant. This plant can be grown in a large half-hogshead, but a better plan is to have a basin of brick and cement sunk in the ground. One six feet in diameter and two feet deep would answer very well. It could be covered with boards and litter in winter.

SHADE TREES.

BY ISAAC HICKS.

It is admitted that thrifty, well-formed trees of any class are objects of beauty, but there is a wide difference in the kinds of trees that fulfill this requisite. Among these pretty trees I think the weeping silver linden excels all others. They are rare, and are worked on other stock, but the eye can rest on a perfect, graceful specimen in a fine lawn, standing by itself, with much pleasure.

But why is it that so many will spend time and money to plant shade trees, and then allow them to grow out of shape, forlorn objects, where a little care in regulating the growth of the head or branches would have made them uniform and attractive? I have seen the American elm, which, when the growth of the top has a proper shape, is one of the noblest of our shade trees, grow up in a straggling manner, sometimes almost like a naked pole, and again like the letter Y, a body and two arms like a pig yoke. I think large trees are much improved in appearance if cut back into a regular head when planted. And the Norway maple can be made to grow erect like the sugar, or otherwise, by allowing the leader to grow and shortening the side branches.

NOTES.

BY "DOGWOOD."

Several years ago a friend who was born in England and grew some forty varieties of roses, &c., gave me what he called a buckthorn. It did not do well, and died in a few years. But meantime I had grafted and budded it in our native thorn, common in low pasture fields. The way it has grown and blossomed shows it well adapted to it. The bud was put in midway on a limb, where it is hard to bud the peach. Still it grew finely. The flowers are double, rose-color, striped and variegated, and are much admired.

Hunting the Balloon Tree.—I suppose botanists, some at least, hardly know what a balloon tree is. But I must preface with a word about my guide. While I know but little of botany—only read a book or two on it—my guide never saw a book on botany. He is a farmer's son, twenty-three years old; still he has made a greenhouse some forty feet long. I'll take you through it before we start for the balloon tree. He did all the work himself, even to making the brick flues and chimney. On one side we find over eighty varieties of begonias—the best collection I ever saw. His Rex are grown mostly in manure, and are very fine. There are over forty varieties of fuchsias and a good collection of geraniums. One also sees palms, dracænas, crotons, orchids, camellias, besides too many things to mention. But this is not all he attends to. In the summer he goes into the field, drives the reaper, follows the plow barefooted, and helps milk the cows at night. Well, he had a balloon tree, and I wanted one. So he led the way down a deep ravine, where one finds several trees not very common in the woods, such as black-haw (Viburnum prunifolium), wahoo (Euonymus), red bud, or bean tree (Cercis Canadensis), Juneberry (Amelanchier botryapium), and the balloon tree (Staphylea trifolia), I guess it. While none of these are quite as good for lawn trees as the large flowering dogwood (Cornus

"Ohioensis"), they are all good in some places. The dogwood is too common, some say; still I have a good one. There is a white pine and Norway spruce some thirty feet high in the background, that help show it off and make it much admired, when in full bloom; this, too, when the woods are full of them. Indeed, one might make a dogwood worth ten dollars by pulling it sideways with cords and by weighting the limbs with stones, to make it weeping.

GRAFTING ROSES.

BY ALPHONSE KARR, ST. RAPHAEL'S, FRANCE.

From Toulon to Genoa, and in the greatest part of Italy, roses are grafted on Indica-major, a very vigorous rose, but which would be very much exposed to frost at Lyons, Paris, etc.

You generally graft roses on the brier (Rosa canina), but neither the brier nor Indica-major are perpetual bloomers, and both, more particularly the brier, have a time of rest.

Must it not sometimes happen that a perpetual variety, grafted on the brier, tells him: "Well, my dear nurse, if we were to bloom a little;" and that the brier replies: "My darling, you are foolish; it is not the season; I still want rest; be pleased to remain quiet, and let me sleep?"

Chance has made me graft some perpetual roses on some Bengales (common China) and I have obtained excellent results. The Bengale, which never freezes here, and is constantly in vegetation, and a really perpetual bloomer, is it not in similar climates more adapted to supply the wants of other perpetual roses, preferable to others which require rest part of the year? And, according to this idea, would it not be advantageous to graft perpetual blooming sorts on other equally constant bloomers?

EDITORIAL NOTES.

FINE PANSIES.—We have not seen, but learn from a friend, that the pansies raised by Mr. Kipple, of Harrisburg, Pa., were this season "something well worth looking at." We like to hear of these successes.

LIME WATER FOR INSECTS.—In some parts of Europe lime water is used to destroy worms when troublesome to lawns. The clear liquid is used, and the creatures come to the surface and die by the hundreds when there. It is possible that those who complain about the larvæ of the May bug which are often troublesome about young roses, carnations, and other plants in the open air, might find lime water a good remedy. It has been used to destroy scale on lemon, orange and oleander trees, with success.

ROSES BY SEED.—The object in raising roses from seed is to obtain new varieties. Although somewhat uncertain as to the result, it is, nevertheless, a very pleasant and interesting occupation. There has long been an idea prevalent that good varieties of roses cannot be raised from seed in England, and that we must go to warmer climates for anything of sterling merit. This, however, is not entirely so, as some excellent varieties recently raised in this country will testify. The tender varieties, however, seldom if ever mature seed in our climate, but even the ripening of seed can be accomplished artificially; and, with the assistance of glass and hot water, we may reckon our advantages equal those in the south of France or Italy. The seed pods should become thoroughly ripe upon the tree before they are gathered. When taken off, place each sort separately into small pots, mixing with them fine sand. They may be stored away in this manner until February, care being taken to keep them out of the way of mice, which will very soon destroy the lot if the opportunity is given them.

Early in February take them out and break up the pods, and rub the whole until the seeds are all separated; they may then be sown in shallow pans, pots, or boxes, using light soil with a liberal admixture of sand, and cover with the same to the depth of one inch. Place them in a frame having a northern aspect, or otherwise in a shady or sheltered spot, where a uniform temperature and moisture can be maintained. About April or May many of the seedlings will begin to make their appearance, but this will depend upon the quality of the seed; if it was well ripened when gathered, a large portion will vegetate the first season, but in most instances the greater portion will not vegetate until the following spring.—*Garden.*

CLEMATISES AS ISOLATED SPECIMENS.—Clematises as specimens on the lawn are very beautiful when well trained and attended to. At Holme Lacy, Hereford, such specimens may be seen, and during the months of August and September they are pillars of bloom and are much admired. They are planted out in well-prepared round beds, and trained to an upright round trellis about 7 to 8 feet high; they are about 2 feet 6 inches in diameter at bottom, and taper to the top. As the young growths appear they are tied down for about two

months. If they are allowed to grow straight up at first the base does not get properly furnished. As the plants increase with age tie or peg some of the old wood at pruning time close to the ground, and regulate the other up the trellis as required, when, if properly trained, at flowering time they are one mass of bloom from the ground to the top of the trellis.—*A Young, in Jour. of Horticulture.*

SCRAPS AND QUERIES.

ROSES IN AUTUMN.—A "Philadelphia Lady" writes: "It has been written that gardeners name their flowers for what they would like to have them, rather than for what they are. We may some day look for a rose named 'amethyst,' not that it will have violet flowers, but as a *desiré* of some enthusiast. So in like manner I have regarded the 'hardy ever-blooming roses,' the so-called hybrid perpetuals, which have seldom flowered for me more than once. But this year I read in your 'Seasonable Hints' that if the flower buds are cut off as soon or before the petals fade, they would bloom again. Well, I did this last summer, and I cannot tell you how delighted I am with the results. I had almost as good a bloom through October as I had in the regular season, Jacqueminot being particularly full of flowers. Even old Baron Prevost, which I never had bloom a second time, had some flowers. I am now satisfied that your plan is just the one needed. Let every lady cut off the June blossoms, even before they fade, and she will have plenty of buds in autumn."

CHRYSANTHEMUM MRS. DR. VERTRES.—Mr. L. C. Lischy sent buds of this variety on the 20th of October, which were then as large as peas.

POPLAR TREES.—A correspondent writing from Long Island says that the borers trouble the different kinds of poplar so much that is scarcely worth planting them any more.

LAWNS AND EVERGREENS.—"J. B.," Fayetteville, Ark., says: "Knowing your kindness in giving the troubles and perplexities of other people considerate attention at your editorial table, it occurred to me that possibly you might be willing to give me and others the benefit of a little instruction. I have been examining not only the GARDENERS' MONTHLY, but several other similar publications for authoritative information as to the best way, not only to make a lawn, but its proper care afterwards. I find such a wide difference between the opinions of different writers upon this subject that my search after light has not, so far, enabled me to see clearly. Some say 'cut close' and often; others, 'cut high,' and not so often. I have even found many writers who advise raking off the grass after cutting. That course might be practicable in a small door yard, but I have seven acres to look after, with only one assistant for a part of the time only. We usually commence cutting early in April, and as a rule, run the lawn mowers over every part of the ground at least once a week. The blue grass grows well until about the middle of June, when crab and foxtail grasses put in an appearance, and from then until frost it is one continued fight between the lawn mowers and scythe and these two enemies of an even temper. Frequently it is necessary to follow the mowers with a scythe to cut off the foxtails that are too high for the machines to cut. I have been told that blue grass is the natural enemy of these wild grasses, and that they will in time crowd them out. If this statement was true, the large dead, brown-looking places all over the grounds ought to grow smaller each year as the other grass grows in strength, but it is not so. I believe the wild grasses are slowly but surely gaining on the blue grass every season, though we sow new seed nearly every fall or spring. How can I change this state of things so as to give the ascendency to the tame grass? Heretofore we have used stable manure, put in in the fall, but this year bone meal and guano mixed, at the rate of four parts of the former to one of the latter, have been substituted, the mixture broadcasted at the rate of three hundred and sixty pounds to the acre. So much for the grass question, except that I will add Bermuda grass grows well in this section, and would, of course, soon kill out everything else; but it has so many objectionable features that it would be adopted only as a last resort. The next subject about which your kind assistance will be greatly appreciated is the care—cultivating, trimming, &c., of evergreens. If possible, there is more diversity of teaching about this matter than that of lawn making. I was taught to keep a space, say three feet each way, from the tree, cultivated for some years before sodding up to the tree. My own very limited experience leads me to think this practice altogether wrong. This class of trees make such an abundance of small roots so near the surface that it is impossible to cultivate the soil without cutting a great many of the roots. But, as I said, my experience is very limited, and so I desire the guidance of a master hand such as yours. I have been very cautious in using the knife about the evergreens, being afraid

of the effect upon them. Last year, however, I had to trim severely a Norway spruce, standing some twenty feet high. It got badly injured during a hail-storm, and in order to get it into shape I had to cut in far towards the stem, taking care to preserve a conical form, and to leave the lower branches the highest. Everybody said I had killed the tree, and I thought so myself. This year, however, far from being a dead tree, it is pushing out new growth with more energy than since I have known it. This leads me to think that perhaps the knife would benefit some other evergreens that are a little lazy. Do all evergreens bear trimming, or is this experience of mine merely an accident?

"Your answer will greatly interest me, and probably many more of your readers. Pardon such a long letter, but being really anxious to learn, and knowing no better source of information, I have taken a liberty I should not dare to do often."

[We know of no department of education wherein it is so necessary to remember that circumstances alter cases as in gardening. The statement, for instance, that blue grass will crowd out all other grasses, is true when the grasses are left to grow up and mature; but, as our correspondent correctly remarks, it is not true when the grass is in the shape of a closely mown lawn. Or it may be true of a closely mown lawn in the North, where the climate will keep the grass green and growing all the summer long, and where "crab-grass," "fall grass" and other tropical grasses do not find themselves so much at home; while in Arkansas the fall grasses would have the great advantage.

So with mowing. Here in the North there are many small growing plants which infest lawns when the grass is kept low. Then they get light and air, and creep and flourish. If the grass is not cut very low there is too much shade for these little pests, and they get smothered out. We see, therefore, that cutting long or cutting low depends on circumstances. It depends on whether we are plagued with low growing weeds or not. There is no reason for cutting the grass long if we are not troubled with creeping weeds. Just so with leaving the mowings on the lawn. These shade the living grass to some extent, and shade tends to weaken what is growing under it. But there may be cases where the shade injures so little that it would not be worth the trouble of clearing the mowings off.

Still again, we have an illustration of varying results in the case of evergreens growing in grass. If the evergreen is weak, and we allow tall and rank grass to take away the food and moisture required by the tree, the tree will suffer. It would be what orchardists have got into the habit of calling bad "cultivation;" but if the grass is kept short, and then not much food or moisture abstracted, the shade afforded by the sod, and consequent coolness for the roots of the evergreen would be very favorable to the health of the tree, and would then be called the height of good cultivation.

From this it will be seen how difficult it is to give precise details for lawn management applicable to our whole country. It is wholly a matter for local experience.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

ROOTING CARNATIONS IN APRIL.

BY AUGUST D. MYLIUS, DETROIT, MICH.

I do not strike my carnation cuttings so early as is customary. I find April struck plants answer all purposes as well as those rooted earlier. I arrange a cutting bed by putting a layer of good potting soil at the bottom, two inches deep; on top of this one and a half inches of sand. My bench for carnations is behind the boiler; over the boiler is the propagating bed for other plants; the part for carnations is the coolest one. The cuttings are rooted in this bed, and not disturbed until time to plant out of doors. They root in ten to fifteen days, and the roots soon penetrate the sand to the good soil beneath. This mode saves time and valuable space in greenhouse. Carnations do not grow much until the cool nights of August and

September come, so that April rooted plants do as well as those rooted in the earlier months, and I think are better winter bloomers. I am raising for my own use 10,000 plants this season.

A WARNING TO FLORISTS.

BY W. T. BELL, FRANKLIN, PA.

About the 20th of January last, during a period of the coldest weather we ever fired through, the gas pipes on our street were broken, and as the ground was frozen hard at the time, so that the gas could not escape through it to the surface, it found its way into the brick street sewer.

A six-inch vitrified sewer pipe runs under one of my houses and connects my coal cellar with the sewer in the street; and as the pipe was laid simply to carry off the drainage from my greenhouses, the joints were not cemented; but the pipe was trapped at the inner end. The illuminating gas found its way into this pipe, and escaping between the joints, rose through five feet of soil, and very seriously damaged the plants in five of my houses. Two large beds of roses in full bloom were entirely stripped of foliage, and all carnation flowers or buds beginning to open, were spoiled; looking, after a day or two, as if they had been dipped in boiling water.

Geraniums, callas, begonias, violets, fuchsias, coleus, stocks, euphorbias, roses in pots, hyacinths, heliotropes, oranges and many other things suffered severely, many losing all their leaves. Phyllanthus and cactus were the first to show injury; one of the latter, having a stem as thick as my arm, being completely dismembered. A fine lot of alternanthera were almost totally destroyed, and all lily of the valley, either in bloom or in bud, were spoiled. About two thousand cuttings in one bench, mostly roses and geraniums, were ruined, and some of my most valuable orchids lost all their leaves. Oleanders, lilium candidum, and some other plants seem to be gas proof, and our verbenas, smilax and Chinese primrose show no injury from it. Our standard roses were cut back, and have broken into bud nicely, and apparently will soon be all right again. I discovered what was doing the damage late at night, and dug down to our sewer outside of the house, and at two o'clock in the morning broke out a joint of the pipe, and stopped the gas from coming in. The loss to me was a serious one, and as many other florists may be liable to injury from the same cause, without suspecting it, I thought it best to warn them of their danger. I would advise that whenever it can be avoided, there should be no connection made between the dwelling or greenhouse and a common sewer; and to anticipate the suggestion that a trap at the street would have kept the gas out, I will state that my neighbor across the street has four traps on his branch sewer, two outside and two inside, and it passed all of them, and nearly drove his family out of the house.

DEUTZIA GRACILIS FOR POT CULTURE.

BY CHARLES E. PARNELL, QUEENS, L. I., N. Y.

The graceful Deutzia gracilis, one of our most beautiful hardy deciduous shrubs, is a native of Japan, from whence it was introduced by Dr. Von Siebold. It belongs to the natural order Saxfrageæ, and is a dwarf-growing shrub, attaining a height of from three to four feet, with long, flexible drooping branches, and small wedge-shaped, lanceolate or ovate lanceolate leaves, tapering to a point, and having on both sides a coating of fine starry hairs. The main branches are covered with lateral branchlets, each bearing at their point graceful racemes from five to six inches in length of pure white flowers, and which are produced in the greatest profusion during the month of June. Dr. Siebold describes it as inhabiting the damp valleys and lofty mountains of Japan, where its fine foliage and attractive flowers form a remarkably attractive feature of the mountain scenery. The graceful Deutzia, when well grown, is one of the most attractive and ornamental of lawn shrubs, and nothing can well exceed the grace and beauty of a well-grown specimen. In order to effect this desired object, it should be planted in a rich, deep soil, and given a good dressing of well-rotted manure every season; keep all grass, weeds, etc., one or two feet away from the center of the plant. All that it requires besides this,is to have all weak and superfluous wood removed as soon as the plant ceases flowering.

As a pot plant, for the decoration of the window garden or greenhouse during the winter season, this Deutzia is of special value, while for cut flowers during that period it is almost indispensable. It is especially valuable on account of its producing its flowers in perfection when grown in a low temperature, say 40° to 45°. In order to obtain the most satisfactory results with this Deutzia, when grown as a pot plant, it should be taken up and and potted in suitable sized pots early in October; press the soil down firmly around the roots, and water freely. Place in a sheltered situation, yet one that is fully exposed to the sun. Keep well

supplied with water, and when cold weather sets in remove to a cool dry cellar, from whence they can be brought into the greenhouse as often as it is deemed to be necessary, in order to obtain a succession of bloom. After the flowering season is over they can be removed to the cellar, and in the spring planted out in a well-manured piece of ground, in order to obtain good growth for another season, but unless the plants grow freely and make considerable flowering wood, it is advisable to permit them to remain in the ground for another season. But after forcing for about three seasons, it is advisable to destroy the plants, for they are then apparently so weakened as to be comparatively worthless, their place being supplied by other plants which should be specially grown for this purpose.

Propagation is effected by division of the plant, also by cuttings of the half-ripened wood, the latter method furnishing the best plants. Of course they are small, but if properly cared for will soon make fine and handsome specimens.

ROSES IN WINTER.

BY E. R. CLEVELAND.

I take it for granted that the majority of your readers will agree with me when I state that there is no portion of the business of a gardener—be he professional or amateur—of greater importance, or demanding a larger amount of constant attention and forethought than that of having an abundant supply of the "queen of flowers" during the winter and early spring months. Roses, no doubt, are always prized and always welcome, but doubly so at the present season, when their delicate and beautiful colors and delicious fragrance delight the senses, and give us a glimpse of summer in advance. Hitherto the florists in the eastern cities—notably New York—had, to a large extent, a monopoly of the winter rose trade, and did an extensive and lucrative business with the various cities of the West. True, the florists in the latter grew roses more or less extensively, but neither in quantity or quality were they able to compete with the more favored growers of the East. It is unnecessary just now to enter into particulars showing how this may be accounted for; suffice it to say, that as a matter of fact there is no real difficulty in the way of growing as good roses five hundred or one thousand miles west of New York as in the latter city.

As a proof of the correctness of this statement I will briefly relate what I saw on the occasion of a visit which I paid, a few days before Christmas, to the gardens of Mr. Gordon, situated in the suburbs of the City of Cleveland, Ohio. Last spring Mr. Gordon decided to commence the cultivation of roses for winter, on a rather extensive scale, and rightly concluding that the way to secure success was by deserving it, he left nothing undone which was likely to aid in reaching the point aimed at. The result must certainly have far exceeded his most sanguine expectations. Previous to commencing the erection of houses in which to grow roses, Mr. Gordon wisely secured the services of one of the best rose growers in America, in the person of Mr. J. C. Gooding. Many of your readers have doubtless already heard of Mr. Gooding, he having gained a most enviable reputation while in charge of the rose-houses of Mr. T. J. Slaughter, of Madison, N. J. Under the superintendence of Mr. Gooding, Mr. Gordon erected two houses of the following dimensions, viz.: length, 150 feet; width, 32 feet; height, 16 feet. These houses may be described as three-quarter span, and are in every way admirably suited for the cultivation of roses. In the center of each house is a raised bench or stage having a similar slope to that of the roof. On this stage is placed some twelve to fourteen inches of soil in which the roses are planted. The plants (Spring struck cuttings) had been placed in position in one of these houses about the first of September, those in the other nearly a month later. At the time of my visit nothing could possibly exceed the health and luxuriance of these plants. I should be afraid to repeat the number of blooms (which a reference to Mr. Gooding's book showed) had been cut during the month or two the plants had been in bearing. I can, however, speak of the quantities of bloom to be seen in all stages of advancement, and no language could possibly be too strong to use in praising the quality of the flowers. I can honestly say that, for size, substance and color, I have never seen them excelled, and I have had some little experience in these matters. I measured some half-open buds of Cornelia Cook, and found the circumference to average eight to nine inches, whilst Catherine Mermet and Adam were equally fine in proportion. Indeed, it is useless particularizing, for every variety which Mr. Gooding had under cultivation yielded flowers of the most superb quality. The principal varieties which he grows are as follows, viz.: Catherine Mermet, Cornelia Cook, Safrano, Souvenir d'un Ami, Perle des Jardins, Bon silene, Marie Guillot, Adam, Douglas, Niphetos and Duke of Connaught.

The leading principles adopted by Mr. Gooding in the cultivation of roses for winter blooming appears to be the securing of young, healthy plants, using a moderately free, rich soil in which to grow them, and giving all the light possible, together with a liberal allowance of heat and moisture. Whether he possesses any special secret other than the means just mentioned, whereby to command success, I am unable to say, but certain it is the results of his practice are eminently satisfactory.

The houses are heated by steam, the apparatus having been put up by the Exeter Steam Company. Mr. Gooding is very well pleased with the way in which it does its work, and with the editor's permission I propose having something to say on this system of heating in a future number.

A FEW REMARKS ON STEAM HEATING.

BY CHAS. M. SIMPSON, VINCENNES, IND.

In reply to Mr. E. Holley's inquiry as to steam heating I will give my experience with steam heating for greenhouse purposes. In rebuilding our greenhouses last summer, that had been before heated with brick flues, we put in one of the Exeter heating apparatus, which I must say is one of the best machines for the purpose I have ever seen. And as to cost, we have one house 65x20 feet, two houses 11x45 feet, one house 45x20 feet. We had this heater put in complete, except brick work and excavating, for $650. The lowest bid on hot water was $900, and we do the work, which would cost over $1,000, to say nothing of the cost of fuel, in favor of the steam over hot water.

We do not burn any more fuel to heat our whole range of houses than we did to run one furnace with brick flue, which could only heat one 11-foot house and half of another. Besides heating these houses we have a one hundred barrel tank elevated for watering our houses and have steam pipe run in it to keep from freezing in severe weather. As to the number of pipes to heat the said houses we use one-inch pipes, five run on a side, in our largest house. The return pipe should be an inch and a half, as it takes the condensation back to the boiler much faster, and that is what we want to get a quick circulation. I think that two-inch pipes would radiate heat faster than two one-inch, and not cool off as soon. Our boiler is twelve section, No. 2, equal to twelve-horse power, and have found it necessary to get up over ten pounds of steam pressure in the coldest weather we have had this winter, which has been 10° below zero, and did not experience any more trouble in keeping our temperature from 60° to 65° than if it had been ordinary freezing weather only. We build our fires accordingly.

As to steam ascending we have found no inconvenience, yet we turn our steam in our tank fifty feet from the boiler, and it ascends forty feet directly upwards and then returns. It takes about ten pounds of steam to get up circulation, and five pounds keep it up. As to leaving your boiler, all you have to do is to put in your fire and it will take care of itself. Having a damper regulator you can set it for any amount of steam you want. We find it necessary to get up of very cold nights, using, as we do, wood and soft coal, but will use hard coal next winter. Where you have hard coal you can leave your fire all night without any trouble.

Some persons that have had experience with steam say that steam cools down too soon. That is true, but it takes but a few minutes to get it up again, and it is not necessary to keep up fire all day when it is not needed for fear it will turn suddenly cold on you, as some florists I know of have to do, therefore wasting as much fuel as they burn.

In our boiler we do not keep up any fire when we do not need it. Have often gone to the furnace of a night when only a few coals were left, and in twenty minutes would have ten pounds of steam, and in less than five minutes from starting fire would raise the temperature from ten to fifteen degrees. And I would advise any one that wants cheap heat for greenhouses to use steam, and I do not think the Exeter can be beat when it comes to economy of fuel and first cost of putting, etc., and when you want to enlarge all you have to do is to add on a few more sections. That is one of the good points about it.

I hope that other florists who have this boiler in use will speak out and let us hear from experience with it, and if you have anything better I want to know it, as experience in such things is our best teacher.

EDITORIAL NOTES.

EARLY BLOOMING OF SEEDLING AZALEAS.—Many persons hesitate to try improvements on azaleas, camellias and other plants because of an impression that it takes a number of years for the seedlings to flower. Col. Wilder has always maintained that it takes less time than people imagine, if they will only grow the plants well, and he undertook to raise and flower greenhouse azaleas

within two years. It now appears that he recently exhibited two seedling Chinese azaleas in bloom at two years from seed. Last year he exhibited plants which showed remarkable vigor at a year from seed, and expressed the belief that he should have them in bloom at two years. He was astonished himself at such early flowering, as were M. Van Houtte and all other cultivators, for it was never supposed to be possible. He has quite a number coming on.

BEGONIA DAVISI.—As a general rule the low-growing Begonias are desirable for peculiarities of foliage rather than for an abundance of flowers, but one here illustrated, introduced by Messrs.

Begonia Davisi.

Haage & Schmidt, of Erfurt, is a notable exception. The foliage is as neat as any ordinary leaf plant, while it is as floriferous as the usual subshrubby kinds. Such a little gem will be desirable, although belonging to a genus in which are so many competitors for popularity.

GREENHOUSES OF CORNELL UNIVERSITY.—A correspondent says: "None should visit the campus without inspecting the university conservatories, as they are full of vigorous plant life, and are interesting and beautiful. The houses are perfect in every detail. They are in charge of Mr. Shore, who came from one of the finest places on the Hudson—that of Mr. Lillienthall, at Yonkers, to act as head gardener at the McGraw-Fiske place, and who has been transferred to the university greenhouses. He is considered a master in his profession. When it is remembered that last fall the conservatories were virtually empty, and that all the life now to be seen there has been created in the dark months of winter, it seems almost magical. The present condition of these fine conservatories speaks wonders for the future, when their capacity shall have been fully developed.

"A large lemon tree in the center of the great central or palm house is worth going up the hill to see, so loaded is it with fruit and flowers; and the south or cold house is ablaze with geranium trusses—a splendor that we can seldom witness out of doors, as our summer rains beat the petals off. An impression exists that the greenhouses are open only to those of the university. This is not so. They are open to all who behave themselves while there, just as are the other collections at the university."

STEAM HEATING.—The numerous letters which reach us show the intense interest the subject has for those who have greenhouses to warm. Most of the objections to it made in the past are being removed. One of these objections was that we could not heat a house rapidly enough—we have to wait till we get up the steam; but those of us who remember how long it took to warm up a house heated by flues, or even by hot water, begin to believe the old system is a case of "the more haste the less speed." After the steam is once up a house can be rapidly warmed hundreds of feet away.

CULTURE OF WINTER FLOWERING BEGONIAS.—Early propagation is indispensable. The cutting should be taken off by March or April, inserted singly in small pots, shifted on as required, keeping them well to the light, pinching back the most prominent shoots now and then, maintaining the temperature at about 55° to 60° by day, but admitting enough air to prevent drawing. By the beginning of June the sturdy, vigorous little specimens that such treatment will have produced should be placed either in frames or in a light, well-ventilated house. About the latter part of the month shift into 4½-inch pots; some of the largest will go into 6-inch pots. The soil should be rich and free—a good mixture consisting of loam, leaf-mould, and well-rotted manure in equal parts, adding thereto a good dash of sharp sand. Give plenty of air, shade from hot sun, and if the plants are in frames run off the lights at nights when balmy weather prevails. A little of such exposure will impart to them a great amount of vigor, and the flowers will come much finer than when they are never exposed to the full influence of the open air. When the pots get full of roots a little weak liquid manure should be occasionally given, the great point being to keep the plants well in growth

until the middle or latter end of September, after which time they should be placed in gentle warmth, a light house where a fire is made on cold nights being the right place for them. From November onwards a constant temperature of 55° is necessary to keep them in blooming-condition. These winter flowering Begonias may be well and easily grown by planting them out in frames for the summer months. Make up a bed of good soil in a light frame, and plant out the first week in June, potting them up again about the middle of September, or earlier if they are large enough. In planting out a richer compost can be given them, as there is not much danger of its becoming sour through over-watering, so that if anything like good treatment is afforded them they will be sure to make very luxuriant growth.—*Garden.*

ORIGIN OF SAFRANO ROSE. — *Journal des Roses* says this was raised by a passionate rose-lover, Mons. de Beauregard, of Angers, France, a retired officer and chevalier of the Legion of Honor. It was raised from the old yellow tea rose in 1839. It is, says the journal from which we quote, the most popular of all tea roses in France, "honored alike by the sumptuous dweller under a mansard roof, as well as by the poorest of the poor." Madam Falcot receives great praise from the same paper as a good old rose.

RULES FOR BURNING COKE.—A recent report on coke and its value, concludes as follows: First, the size of coke used should be a size smaller than that of anthracite for the same purpose. Second, fires should be made deep and broad, and after coke catches, all drafts should be checked; at night entirely, in most cases. Care must always be taken to keep the supply of coke large, as fire will not be held except in deep bodies of coke. Third, the ashes from coke are a white powder, and free from clinkers, those from coke should contain no slate or waste.—*Virginias.*

SCRAPS AND QUERIES.

RICHARDIA HASTATA.—"C." asks: "Can you inform me of what country the yellow Calla Richardia hastata is a native of, and when and by whom introduced?" [South Africa.—Ed. G. M.]

FRUITING OF A LEMON TREE.—"Subscriber" says: "You suggest, in the December number, that I describe the treatment my lemon tree has received. The tree is in a box, the soil rather porous, perhaps too much so, as the water runs out very soon after I water it. I put a good many bones in with the soil thinking it would be good for it. It seems to make good foliage. I keep it in the cellar in winter and water it once a week. It stands in summer about four feet from a brick wall and gets the morning sun. Perhaps the reflected heat from the wall does not help it?"

[From this it will appear that the reason why the plant does not flower is that it is in a vigorously growing condition. But this is a good fault. Keep it in the box without repotting, or adding more nutritive material, and as soon as it has exhausted itself a little it will, no doubt, flower and fruit profusely. It is much better to have a tree temporarily barren from a healthy cause like this, than to have one suffering from disease.—Ed. G. M.]

THE GROWTH OF TREES IN CATALOGUES.—The Rev. Henry Ward Beecher thus letteth himself out on something in some "fat" catalogues: "Nobody has the tree I want except in their catalogue, and then, when I send for it it dodges out of that. Does nobody keep it? Is there any such thing? Or is it a myth,—a mere arboreal sprite, without a local habitation, and only a name?

"I am told—but rapidly am coming to disbelieve—that it grows wild, in New Jersey, in Pennsylvania. Oh, if it were only true! I might set a trap for one—or offer a premium—or send an exploring expedition. But, no. It may exist as a Berkleyion idea, but not in substance—wood, bark, leaf and cone.

"Oh this bother about trees! When men have, at length, a home, it is too small for trees. If a large enough ground exists the owner doesn't know anything about trees—doesn't care. If he does care he can't get them. Nobody has them—except catalogues. If I could only make my trees grow as catalogues do! Frost don't blight, nor heat burn them. They are gardens of Eden till you try them, and then they turn to barren and waste.

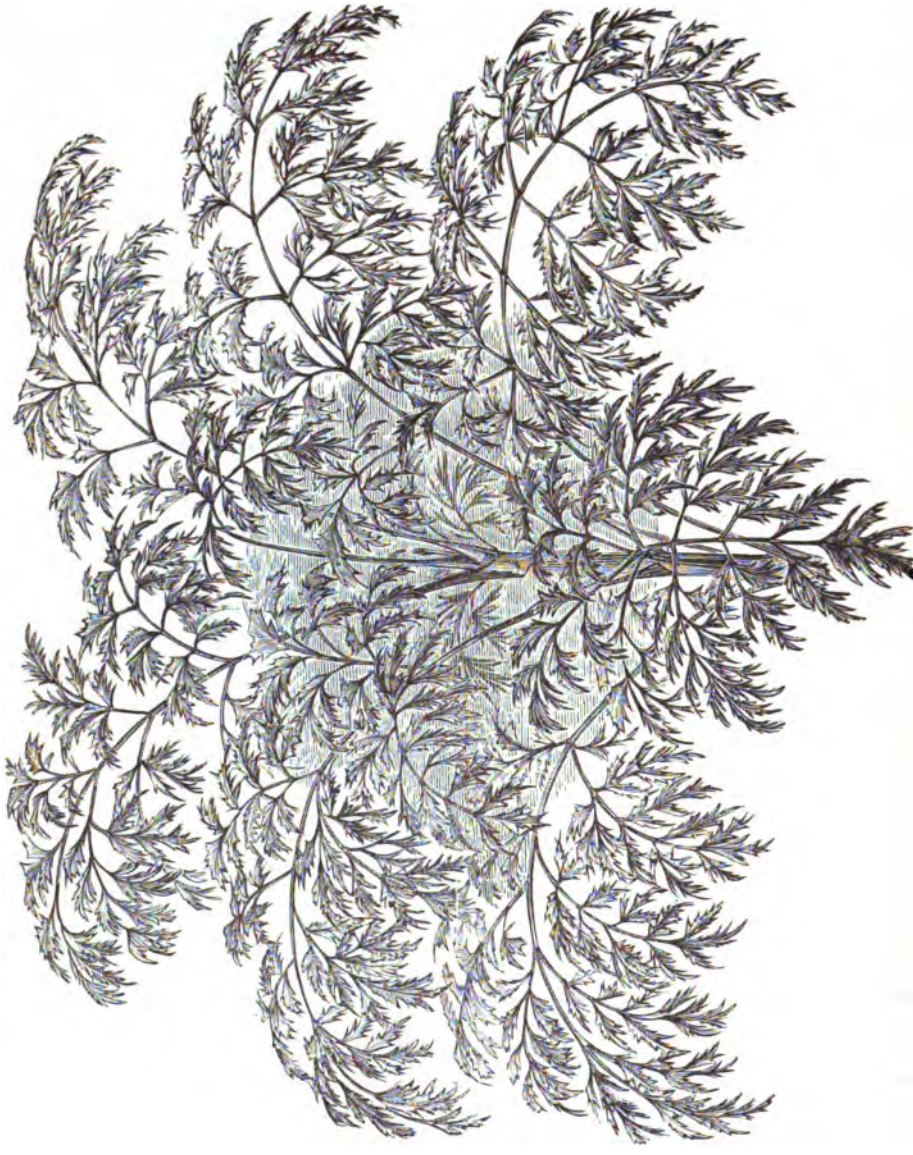
"Well! I feel better.

"Sometime or other don't you want a list of trees which prove hardy at Peekskill? After they have grown a few years I am going to advertise that my grounds are open and at the service of all gentlemen who wish to see, in good size and condition, the more rare trees, and those which prove hardy. I have thirty species of pine."

A STRIPED AGRIPPINA ROSE.—Walter Coles, Claymont, Del., says: "I have sent you by this morning's mail a striped rose. It came from an Agrippina bush, but all one side seems to have this striped character, same as the one sent you.

Can you kindly tell me if it is anything rare or worth taking care of?"

[Very double and very sweet scented. American Banner we believe to resemble it, but we have none at hand for comparison. If different from this it will be very desirable.—Ed. G. M.]



Panax plumatum.

NEW OR RARE PLANTS.

PANAX PLUMATUM.—A very elegant small-growing plant, introduced by Mr. Wm. Bull from the South Sea Islands. The leaves form a crispy head of foliage, and are very elegantly divided, the leaflets long-stalked and more or less deeply lobed, the edges notched with more or less upcurved teeth. It is a plant of pleasing character, having somewhat the aspect of P. laciniatum, but being many degrees more finely cut.

STREPTOSOLEN JEMESONI.—This pretty plant was discovered by Hartweg in Ecuador, and was first called Browallia, by Bentham. It has orange-red flowers and ought to be as popular as the well-known blue Browallia. It was introduced to cultivation by Messrs. Veitch.

Fruit and Vegetable Gardening.

COMMUNICATIONS.

PROGRESS OF NORTHERN SUGAR MAKING.

BY JOHN C. SMOCK, NEW BRUNSWICK, N. J.

On page 83 of the last number of the GARDENERS' MONTHLY there is a paragraph from the *Agriculturist* relative to sugar making in the country, which does not include any reference to a large and successful establishment in Cape May county, New Jersey. I take the liberty to call your attention to the last annual report of the New Jersey Agricultural Experiment Station, a copy of which I have mailed to your address. Possibly the account of this success in New Jersey may be of interest to you and your readers.

Another matter. Would it not be well to have the Japanese persimmon tested in Cape May county? I write of this, as I think it might be well to have it tried there. And if I can find some one willing to give it a fair trial then shall write you, as I presume.

INTRODUCING NEW FRUITS.

BY W. F. BASSETT, HAMMONTON, N. J.

New fruits, that excel all others in all important points, are now so frequently offered that it seems to me a matter of great importance to the horticultural world that all claimants should, by the force of public opinion, be compelled to introduce themselves in a manner sufficiently formal and guarded, to prevent the imposition of worthless fruits as old varieties under new names, upon the public. We cannot, of course, always know that a variety will succeed generally, because we find it doing wonders in some one locality; but when a considerable number of our leading fruit growers are invited to visit the new-comer and decide upon its merits, or where notice is duly given to the public generally, and all invited freely to come and see it in fruit, we are not likely to get an old variety under a new name, to say the least, and we are pretty sure to find one that is valuable in some points and in some places. I am glad to be able to say that such methods are being more and more generally adopted. On the other hand, when we see the introducer of new (?) fruits following in the wake of the sporting fraternity and practically offering to bet, as stakes, their bantlings against some other one for large sums of money, with no previous formal introduction or acquaintance, I do not generally feel much confidence. Doubtless these offers are intended to convey the idea that the introducer has unlimited faith in the variety so pushed forward, but is this the legitimate inference to be drawn? I think not. In my opinion it is much more likely that it is done to gain notoriety, or as a "game of bluff," with the expectation that enough "gulls" will be found to pay all expenses and a handsome profit before the time for the actual test arrives.

THE NEED OF CALIFORNIA.

BY CHARLES H. SHINN.

My exchanges and letters from horticultural friends on the Pacific Coast write in warning of "danger ahead." The planting of fruit trees has gone on with an energy never before equaled on the American continent. My own personal knowledge of the situation then, and acquaintance with Eastern horticulture, urge me to say that in my humble opinion the natural home of the temperate zone fruits, particularly the stone fruits, and the vine, is in California, so far as soil and climate go. If a cordon of law and wise quarantining could fifteen years ago have been placed about the State, it would simply be to-day, as it was once, the horticulturists' paradise, and fruit raising would in ten years more be the chief industry of the State. One would be able to drive for twenty miles through a continuous orchard—absolutely unbroken, except by fences or gardens, and there would be half a hundred such centers of fruit culture in the State. Vineyards of 1,000, 5,000 and 10,000 acres would not be uncommon. The control of the trade in fresh and dried fruits would be in our hands.

But scale-bugs, woolly aphis, red spider, curculio, and in fact all the parasites known to East and West are naturalized in California, and the discouragements of the business steadily increase. Legislation of the most stringent character is advocated and earnestly hoped for. A diseased

orchard, if taken in hand soon enough, can be profitably treated and cleaned of the parasites. But delay is fatal, and careless neighbors aid in spreading the pests.

There never was a time when trained horticulturists were more needed than in California at present. The Agricultural Department of the State University needs more aid in its vigorous efforts, and an entomological department, under the best men to be found, should be endowed and liberally supported. Matthew Cooke, chief horticultural officer, is a man of much capacity and energy. He should find public sentiment in each county of the State strongly in favor of "war to the death" against the insect pests. It would honestly be better to destroy every fruit tree in the State, and begin over again, than to give up the best belt of fruit-growing land on the continent. But this is not necessary. All that is required is that the horticulturists there be animated with one spirit, and work in harmony.

RAMBLING NOTES OF FRUITS AND TREES.

BY ISAAC HICKS, WESTBURY, L. I.

I find in turning over the leaves in memory's pages there are a few things that may be worthy of preservation; for he that loves to ramble in Flora's kingdom will find objects of interest and admiration continually, and in the choice gifts of fruit, flowers and trees find an ever-pleasing study. How bright was the anticipation as the warm days of early summer ripened up the first and most welcome fruit, the strawberry, that many of these highly-praised new berries would be tested. We had a fine feast it is true, but the clouds withheld the blessed rain and our hopes were not fully realized. While we must continue to try new kinds, such is the impulse of all lovers and growers of fruit to obtain something better than we now have, I think those who have in bearing the Charles Downing, Cumberland Triumph and Sharpless may rest satisfied, and let others prove the new and highly extolled varieties until they really discover the best strawberry on earth which I think, when found, few will believe in. Following the strawberries come the cherries. But the black knot killed or severely injured most all the twenty or more varieties we had a few years since, only the Downer's late escaping. I find this variety for us is worth much more than any other. It ripens late and bears abundantly; is healthy and long lived, a most excellent fruit for the table or for canning, and not least, the birds having freely partaken of earlier ripening kinds, kindly leave Downer's late for us. It does not crack or rot on the tree like many varieties. Raspberries, too, are claiming much of the attention of fruit growers; we find several new names as competitors for the best, largest, most productive sort, and if improvement continues as it has done for the last ten years, we will approach very near to perfection. I have in cultivation the New Rochelle and Caroline seedlings of S. Carpenter, of New Rochelle. The former is a strong and rapid grower, a very abundant bearer of large purple fruit of the cap family. The flavor is equal if not better than the Philadelphia. They are growing on a light, sandy loam, and the two last summers were hurt by the severe drouth. On heavy soil and near where it originated on the farm of Wm. S. Carpenter, they were marvels of productiveness. With us they are far more profitable than the Philadelphia, Bristol or Brandywine. But after three or four years trial we prefer the Caroline. It is a beautiful yellow cap, in no wise resembling the Brinckle's orange, so far hardy, continues a long time in bearing, and while other varieties were dried up by the dry weather it scarcely affected the Caroline. It has a mild, pleasant, but not rich flavor like the B. orange, and is the poorest variety to can that we have tried. I do not wish to disparage any of the new varieties before the public, but for family use and near market would like to see these two sorts more extensively tested. Cuthbert growing in the same patch were not half as productive, perhaps owing to allowing the suckers to grow so as to have a stock of young plants. In beauty, size and excellence of fruit it is good enough, but we must recollect that some varieties succeed admirably on clay soil, or when the rocks are slowly disintegrating, furnishing new food for the plants, as is the case in Westchester and Orange Counties in the State of New York, or on the rich prairies of Illinois; and on our sandy soils they are very inferior and the grower sadly disappointed.

I will say but little about blackberries. A few years ago we destroyed a half acre of Lawton because they were frequently winter killed, and planted Kittatinnys. We missed it. Lawtons were the best, Missouri mammoth was better, and now we hope the Snyder and Taylor will be good and hardy.

My experience with grapes has been the great liability from the ocean exposure to promote the growth of fungus; that Concord is the kind and most to be depended upon. Vines of Martha,

Brighton and Worden trained against a building are growing and bearing nicely, and better than the Concord under the same condition.

What an interest is awakened about the old despised Sand Pear. We have had one for forty or more years, a beautiful tree, bearing every other year a large crop of pears, and scarcely noticed except by a hungry urchin tempted by the yellow fruit to taste, and soon throw it away with a wry face. Now sand pears or their offspring are all the go. The seeds are precious, too. If the Keiffer's Hybrid should prove too near a relationship to its parent for an eating pear, still it will be valuable for cooking, and it is such a satisfaction to see a tree grow so rapidly and strong as they do, and bear so soon, too. We use or give away our sand pears, for there is no kind equal to them for pickling. The trees are ornamental, too, especially in the spring. Last year we had a nice crop of Japanese sand pears. They are of a russet hue, very productive, and in quality like the Chinese; in shape like the Buffum.

When inquired of as to what is the best pear in all respects to plant in this section, I answer the Bartlett. And what next for profit? The Merriam, as a profitable, reliable pear, is continually growing in favor. I am aware it is but little known or planted, but so many of the largest and best have and are failing that one not so high-toned that will stay with us, grow fast, and hold its abundant leaves until killed by frost, bear abundantly of fair-sized and good fruit, keep a long time in ripening, is certainly a desirable variety, which no other sort of over one hundred kinds we have grown will do. We have not been visited with the pear tree blight, and cannot speak in regard to that. I think the Manning Elizabeth the best pear that ripens before the Bartlett.

It is singular to note how different some varieties are from other sorts in the same orchard. We once planted five Beurre Bosc trees in the same orchard with the Merriam Boussock, &c.; the Bosc all dwindled and died, and the fruit worthless, while near us, where there is clay subsoil, they are the finest of pears. The purchaser should make inquiries about the soil certain varieties succeed in ere he makes a selection.

For nearly fifty years we have been waging war against the cucumber beetle or striped bug, but after trying many ways, some quite troublesome and expensive too, I recommend the planting of one or more seeds of the Hubbard or Boston squash in melon hills, and as the beetle is very fond of the squash plant, they may eat them first and satisfy their hunger; then pull them up when the danger is over. The surest method, I think, is to plant fifteen or twenty seeds in a hill, and as soon as they peep above the earth dust a little superphosphate around and near, but not on the plants. This will make it unpleasant for the beetle, and they soon quit. It may be necessary to repeat the dose lightly two or three times, as the rain may prevent the escape of the ammonia; and there is this advantage over tobacco dust, hellebore, sulphur, &c., it will cause them to grow rapidly, even if the bugs do not come. A frequent inspection is necessary, for they need it.

WHEN SHALL WE BREAK LAND IN THE SPRING?

BY RUSTICUS.

In considering this subject there are two methods that I take to convey my impressions. One is that of a neighbor who is the most inveterate plower of wet land that I ever knew. His practice is most objectionable to me. He will break land when the water flows in the furrows after the plow. Another neighbor was saying to me a few days ago that this gentleman stopped plowing for some days, first when the ground was in favorable plowing condition, and renewed it when it was entirely too wet. That sounds very odd. Turning over land too wet "kills" it for that season, and if the following winter be not severe, with heavy freezes, the land will still feel the bad effects. If the earth wears a shiny appearance when plowed or spaded up, stop work, for it will almost inevitably bake and remain cloddy throughout the season. Nothing is gained by it, but much lost. The other person I have in view rather errs on the other side. He once injured a piece of land so seriously by breaking it up wet that he was led to wait and wait before plowing, longer than absolutely necessary, perhaps. Now, must we only break land when dry as powder? I think this entirely unnecessary. My view is that the "happy medium" is the correct thing. Farmers, generally, hold that where soil compacts into a ball when pressed in the hand, it should not be plowed or stirred. This is hardly accurate, I opine. In the spring of the year land often becomes "weather hardened," and needs exposing to air and sunlight for amelioration. It can be safely upturned even when somewhat wet. Soon it will soften and crumble, and can be easily and advantageously worked. I would not be misunderstood. It requires nice judgment to determine the safe point. This year

I began my vegetable garden when some might have thought the ground too heavy. But the genial effects of air, light and sun were very noticeable. By not waiting so long until breaking up land you gain valuable time, a very important element in gardening. Should a late frost threaten the young plants, mulch them, and you are safe. The early bird catches the worm. Since writing the above I have been examining Peter Henderson's garden manual, and am glad to quote him as substantiating my position to a certain extent. He says: "One of the most important things is the condition of the soil, which should be as thoroughly broken up and pulverized by plowing and harrowing, digging or raking, as its nature will admit, care being taken that it is worked when in that state, that is neither too dry nor too wet. If too dry, particularly if the soil is of a clayey nature, it cannot well be got in the proper friable condition without an unusual amount of labor; and, on the other hand, if too wet, it clogs and bakes, and becomes so hard that the air cannot penetrate, leaving it in a condition from which good results cannot be obtained." Let the gardener exercise great caution. There is much in a right start.

EDITORIAL NOTES.

PISTILLATE STRAWBERRIES.—There was a time when little value was placed on the sexual differences in the strawberry flower, even where they were recognized. Nicholas Longworth, of Cincinnati, did inestimable service in making the value generally known. Up to his time much greater crops could be produced by growing pistillate kinds, with a few plants of strongly staminate kinds set out here and there as a fertilizer than by using the best hermaphrodite then known. But the introduction of the remarkably productive hermaphrodite, Wilson's Albany, remanded, for the time being, Mr. Longworth's endeavors to forgetfulness. But now that the Albany has degenerated, we have no hermaphrodite that is equal in productiveness to some of the pistillates, and it is becoming a question whether we shall not yet have to bring Mr. Longworth's views again to the foreground. We are reminded of this by the following, which we find in some recent proceedings of the Massachusetts Horticultural Society:

"Some varieties require to be grown in hills, and to have the runners cut off as soon as they appear. Such are the Sharpless, Bidwell and Triomphe de Gand. Some are pistillate and require the bi-sexual kinds to be planted near by and to bloom at the same time. Such are the Hovey, Crescent, Jersey Queen and Manchester. For want of proper impregnation these kinds often fail of a crop, but with a suitable companion the pistillate varieties produce very large crops, as did the Hovey forty years ago, and as Mr. Hovey will show us it can do now. Some varieties produce a large number of trusses, and give promise, when in bloom, of extraordinary crops, but do not yield so much as those of less pretentious appearance. There is a limit to the power of production, and where there is a superabundance of trusses of flowers, only a portion will set their fruit and carry it out to perfection without excessive stimulation. Another cause of failure is a deficiency of pollen in some of the bi-sexual varieties, and it is well to plant near them such as are furnished with abundance of it."

STAWBERRIES IN ENGLAND.—There was a time when huge strawberry gardens were peculiar to America; but England is now following closely. Mr. Winston, in the county of Kent, not far from London, has three hundred acres in strawberries.

STRAWBERRIES IN EUROPE.—Prof. Budd is writing some interesting European letters to the *Iowa Homestead*. Of strawberries in England he says: "The strawberry here exceeds my expectation. The crops are as bountiful and the fruit as large as that of our best varieties in Iowa, but the quality is far below our Charles Downing, or even Crescent and Cumberland Triumph. Some of their best varieties are of recent origin and have the same parentage as ours."

Visiting the grounds of Mr. Henry Vilmorin, in France, he says: "Here is a part of the grounds where all the races of the strawberry have been grown for years. We have the impression in America that it would be useless to introduce any variety of the strawberry from France. For the prairie States this seems a great mistake. Many varieties on these grounds with an admixture of the great thick-leafed species known as Fragraria Chiliensis would luxuriate in our climate. For the first time I here saw the fruit of the true blue Chili strawberry. The fruit is very large, white (or rather a yellowish white), but the quality is rather low when compared with our Charles Downing. Some of its crosses, however, with the Fragaria Vesca are very high in quality, yet they have very largely the leaf of the Chili species. Unlike the Fragaria grandiflora of South America (to which most of our best varieties can be traced) the Chili species has vigorous runners like our American wild species.

NEW STRAWBERRIES.—Mr. Hovey says: "I think I state the truth when I say that a batch of seedlings saved from the best varieties, will produce full as fine a lot of strawberries as nine-tenths of those named and offered for sale as varieties superior to all others."

RAISING NEW STRAWBERRIES.—Few persons have given more attention to the careful production of the new varieties of strawberries than Col. Wilder, and the results of his extensive experience must be of great value to beginners in this pleasant pursuit. In a recent essay before the Massachusetts Horticultural Society, he thus details his views and experiences:

"The strawberry has assumed great importance among our cultivated plants, and great progress has been made in the production of new and fine kinds, but there is still room for improvement. We know no reason why we may not produce varieties of strawberries of the finest quality and such as are adapted to every section of our vast territory. To produce them we should select as breeders those which possess the characteristics which we wish to obtain. To make sure of a perfect cross, the essayist has chosen pistillate kinds and impregnated them with those of the greatest excellences, for example, the Crescent—which, though of second quality, possesses extraordinary hardiness and productiveness, with good form and color—which he has crossed with the President Wilder, Duncan, Triple Crown and other high-flavored sorts. From these crosses he has obtained some very promising kinds. The time is fast approaching when the public will not be satisfied with so poor a strawberry as the Wilson, and if we can produce a bet ter one the Wilson will disappear from our mar kets. If we can produce a variety of the quality and productiveness of the Hovey in former years, and better suited to general cultivation, should we not do it? What is wanted is varieties of excellence that everybody can grow."

GARDEN CULTURE OF THE STRAWBERRY.—Col. Wilder is of opinion that for garden culture planting in rows three feet apart and one foot apart in the rows, allowing each to make from two to four shoulder runners, and no more for the first season, is best. These by autumn will make a row of thrifty, strong bearing plants, and will produce more than the common matted row. For field culture the rows should be four feet apart and the plants one foot in the row, and all superfluous runners should be pinched off so as to leave only strong plants. It may be added that it is found by experience that a renovation by replanting young ones about every second year, is good practice. For garden culture we should plant a young bed every second year to succeed the older one.

DEGENERACY OF STRAWBERRIES.—Col. Wilder believes that the degeneracy or wearing out of varieties may often be traced to the exhaustion of proper elements in the soil, and to the bad manipulation of the plants. In the rage for novelties, described as the "best in the world," we meet with many disappointments, and sometimes become disgusted with their failures and cast them out as worthless without a fair trial. So also with some of the old kinds, which have not been so much cultivated as in former years, such as the Hovey, Jucunda, Triomphe de Gand and others which were once popular. The essayist thought it would be a wise measure for the society to offer a special premium for the restoration of those old, valuable varieties of fruits and flowers which have gone out of general cultivation. But from our experience it seems likely that much of the degeneracy of strawberries comes from disease which, once affecting a plant, becomes extended by runners. We fancy if strawberries are propagated from plants that have not the "spotted leaf," or other troubles, they would rarely "wear out."

A PERFECT STRAWBERRY.—Many points, not often thought of, go to make up the perfect berry. At a meeting of the Massachusetts Horticultural Society, W. H. Hills, of Plaistow, N. H., spoke of an extraordinary crop of Miner's Prolific, but the fruit ripened on one side, so that it was difficult to get the pickers to select only that which was ripe. A fruit that will ripen uniformly all through at once, has a great advantage over such a one as Mr. Hills referred to.

LAYERING BOXES.—As the season for preparing strawberry runners for "pot" plants is now approaching, it may be in order to note the great advantage the cheap chip baskets have over ordinary flower pots. Advances in horticulture are often the greatest in small things—and we really think this invention of Mr. Ryder deserves a rich reward.

PROFITS OF VEGETABLE CULTURE IN TEXAS.—Mr. H. Tone said at the North Texas Horticultural Society, that two years ago no member of that society would have believed that $250 per acre could be realized from so insignificant an article as wax beans, and yet it has been done by half a dozen of their members. To have told then that $500 could be realized from an acre of cabbage would have subjected one to a charge of lunacy, and yet that figure has been reached and surpassed the present year.

FORESTRY.

EDITORIAL NOTES.

FREE LUMBER.—According to what we gather from the Chicago *Tribune*, the interests involved in the "free lumber" question lately before Congress are chiefly of pretence only, the real object being the final destruction of the whole protective policy of the nation. We thought so, and as our magazine is not a political one, we treated the endeavors to draw us into a discussion of this "duty-free lumber" question somewhat coldly.

We can only say in a general way, that the talk about "preserving our forests" in the way the matter is being introduced in these political discussions is clearly of no practical value, and if our forestry associations are to be made mere tenders to the vessel of general "free trade" or other "political nostrum," the sooner those of us who do not wish to mix up party politics with our forestry work understand it the better. It was always a wonder how many old and mere politicians captured the American Forestry Association at Chicago; but the milk is beginning to ooze through the shell. A forest is bound to rot away after one or two hundred years. If a good market price cannot be obtained for the lumber, the occupant will cut it off and plant corn. To cheapen your own forests, and increase the value of your competitors' is the surest way to hasten your own forest destruction. It is amazing to us that any one can believe that to render your own forests valueless is the way to preserve them! But the truth is that no one believes it. It is only used for general political purposes.

CANADIAN LUMBER.—Our excellent New York neighbor, the *American Agriculturist*, has the following in its March number:

"Those who have looked into the subject most carefully, are confident that the interests of our country require that all lumber be admitted free, and such a bill has passed the Senate. Canada is the only country from which we receive lumber, and it is held that every inducement should be given to the Canadians to cut down their forests to supply our consumption, while we preserve our own and allow them to grow."

If the last line read "allow them to die," instead of "to allow them to grow," it would have about covered the case. Does our contemporary really believe that if we render a tree worthless it will be "allowed to grow?" All experience shows that it is because trees are worth nothing for the timber market, that the land is cleared and put into farm crops. Surely there is far more timber then "left to grow" when it is made profitable to grow it, than when there is "nothing in it."

And then we have heard that so much of the "forestry anxiety" is on account of the "influence of trees on the climate." We heard this from Canadians at Montreal last year. But it appears from the extract above that the Canadians are willing to risk their country becoming an "arid waste" if the Americans will only give them a big price for their logs.

It is becoming clearer every day that the "anxious foresters" who captured the Forestry Association at Cincinnati are simply free traders, and as a rule have no interest whatever in forestry in itself.

Now whether free trade or protection is a benefit to our country is none of our business here. There are plenty of channels through which it can be better discussed. But it is our duty to show that the pretended interest which so many show in forestry is only a cover for something else.

THE LOCUST BORER IN OHIO.—At a recent meeting of the Summit County (Ohio) Horticultural Society, Mr. M. C. Read, of Hudson, noted that "the history of the Clytus, a beautiful beetle, whose larvæ bores the body and limbs of the white locust, illustrates the law of change. Some thirty-five or forty years ago the white locust, because of its rapid growth and beautiful appearance when young, was extensively planted as an ornamental tree. For many years it seemed to be without an insect enemy; but after a time this elegantly marked insect was occasionally observed upon and in the neighborhood of these trees. Its members steadily increased, until the bodies of most of the locust trees were honeycombed with the galleries formed by the larvæ, and the sickly appearance of the trees foreboded their destruction. In later years, apparently without cause, the number of these beetles has been so reduced that a collector, in many places where they were abundant, can obtain but a few specimens in a season. I do not know what particular insects are to receive credit

for this work, but it is certain that its natural enemies have, by virtue of the law already stated, checked its abnormal increase, and established a substantially harmless equilibrium."

THE LARGEST AMERICAN TREES.—The largest specimens of wood so far received by the New York Museum is a section of the white ash, which is forty-six inches in diameter and one hundred and eighty-two years old. The next largest specimen is a section of the Plantanus occidentalis, variously known in commerce as the sycamore, buttonwood, or plane tree, which is forty-two inches in diameter and only one hundred and seventy-one years of age.

WOOD OF THE BLACK JACK OAK.—The *Florida Dispatch* says the wood of the black jack, (Quercus nigra, we suppose,) takes the place in the South of bird's eye maple.

TIMBER OF THE CHINA TREE.—In the South, the Melia Azederach, or China tree, grows to perfection, and the *Florida Dispatch* says is of excellent quality in cabinet-makers' work.

PINE TREES IN TEXAS.—The last census report gives Texas the first rank among the States producing pine trees, estimating the number of feet of that species of 67,508,500,000, nearly double that of Michigan, which has 35,000,000,000 feet and occupies the fifth rank. Maine occupying the lowest on the list, with 475,000,000 feet—all in board measure.

SUN DRIED WOOD.—A correspondent of the *Massachusetts Ploughman* finds that wood which is dried slowly in a cool place is better than that which is dried quickly in the hot sun, even though cut in the summer.

VARIABILITY OF DURATION IN TIMBER.—The average life of a railroad sleeper in our country is seven years. There are 2,211 in a mile. The average cost is 50 cents each. Thus our sleepers are costing us $1,105.50 a mile for each of the 40,000 miles in the Union. The sleepers on the English roads last on an average fourteen years, and when properly treated with preserving substances, they last for a century.

PARSLEY LEAVED HAWTHORN.—According to the *Florida Dispatch* this pretty hawthorn, Cratægus apiifolia, is known in the South as "'possum haw."

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

ARE ALL MUSHROOMS MORE OR LESS POISONOUS?

BY H. W. RAVANEL, AIKEN, SOUTH CAROLINA.

I note your comments on the statement of the *London Medical Times*, that "all mushrooms are more or less poisonous." The term "mushroom" is rather vague, but it seems to be intended here to apply to all those larger fleshy species of toadstools which might, from their appearance, be used as human food. Of course we have no exact knowledge of the real proportion between the edible or harmless species and those which are poisonous. But few persons would care to subject themselves to a test of this kind. Quite a large number are noted by Fries in his "Systema Mycologicene," and by others of the old mycologists, as "edible." Some are also known to be poisonous, and therefore great care should be used in preparing them for the table.

As far as my knowledge and experience go in these matters, I am inclined to believe that so far as the statement "all mushrooms are more or less poisonous," is from being true, that on the contrary, most mushrooms are innocuous (except that they may be tasteless or indigestible), and that those which are actively poisonous are comparatively few. I base my belief partly on my own experience, but chiefly on the investigations and trials made by the late Dr. Curtis, the eminent American mycologist, for a series of years, on the mushrooms of North Carolina. For a period of about thirty years, closing only with his life, we were in constant correspondence on botanical subjects. During the war, when fresh meats were not always to be had, Dr. C. would often say jocularly that he was testing our common native mushroom, and found many of them really de-

licious, some quite palatable, and others to be discarded as tasteless or uninviting. Almost every letter during the warmer months had something of new discoveries in the gastronomic qualities of Agarics or other allied genera of mushrooms; of some of the Boleti, and of the fleshy Polypori or other soft and tender species, which, found in sufficient abundance, might be desirable. In no single case that I recollect, did he suffer any evil consequences from their use. Of course he exercised judgment in this groping of his way, as it were, in the dark. All the species noted in the books as "edible" he used without hesitation. Species of similar habits and appearance, though botanically different, were also tested with some care. Such as were known to be poisonous, or had an offensive and repugnant look, were avoided. Boletus Satanas, which Lenz, the discoverer, so named, because he had tried it, and proved its poisonous properties, "vitæ periculo" was carefully avoided, whilst some other species of Boletus were found to be good.

Dr. Curtis in this way tested over one hundred of our American species of mushrooms. He had accurate drawings made by his son, and colored from living specimens, he himself writing the descriptions so they might be recognized by persons who were not familiar with botanical terms, with the intention of publication. "Mycophagia," as its title indicated, I know was completed and placed in the hands of the printers; he so stated to me in one of his last letters, but a few months previous to his death; but why, after an interval of more than ten years, it has never been published, I am unable to say.

[The drift of the paper in the *Medical Times* is that all mushrooms are poisonous "when they are uncooked."—Ed. G. M.]

CRATÆGUS BRACHYACANTHA.

BY L. B. CASE, RICHMOND, IND.

I have just finished reading the February number of the MONTHLY, and am not quite satisfied with the information I got from a few paragraphs. First, in regard to Cratægus brachyacantha. We are all familiar with the fact that there is an acknowledged undescribed species of Cratægus found along the west slope of the Rocky Mountains, and usually referred to C. rivularis, *i. e.* by Prof. Watson in Vol. v., King's Report of the 4th Parallel, page 92; by Prof. Porter, in Hayden's Report, 1871, page 482; from Utah, by Prof. Coulter in Hayden's Report, 1872, page 765; by Prof. M. E. Jones in his Fascicles, No. 2, of Utah Flora, 1880; by Prof. Sargent in Forest Trees of America, No. 103. We may also quote Nuttall in Vol. 1, North American Sylva, as referring indefinitely to a doubtful form from the same place, and perhaps many others not at present recalled. But I am not sure that this is the form you refer to, neither do I know which Red River Drummond collected in—Red River of Louisianna or Red River of the North. So this may not be the form you have described under the name of C. brachyacantha, and probably the west Rocky Mountain species have not yet been properly made out and published; if so, hope you will do so at an early date. But first, will you not give us more information of C. brachyacantha, particularly some of the synonyms and its habitat? Perhaps Mr. Letterman would be willing to tell us more of its peculiar characters and general condition; at least I should ask him to do so if I had the pleasure of his acquaintance, which unfortunately I do not possess.

SOME PLANTS OF MONTGOMERY CO., KANSAS.

BY E. N. PLANK, INDEPENDENCE, KANSAS.

In making a botanical survey of this county, I have found, unexpectedly, several plants rarely found in this latitude, 37° and others so interesting and beautiful that the fact of their growing here may be of general interest.

Gilia coronopifolia.—This beautiful plant, the "standing cypress" of the gardens, I have seen in one locality only in this county. It is a common inhabitant of the Southern States, extending westward through Texas.

Acacia filicina (frilled)—A fine little shrub that has worked its way up from a more southern habitat. With us it does not grow more than two feet high, though further south it is said to attain a height of five or more feet. Its leaves are as finely cut and beautiful as those of a fern. Its flowers are whitish and globular in form.

Æsculus parviflora.—This pretty species of Buckeye had not been reported as growing in Kansas until I found it in this county, where it is not uncommon. It is kept for sale in the eastern nurseries, and is worthy of general cultivation.

Eryngium Leavenworthii.—A remarkable and singularly beautiful plant, growing everywhere in Southern Kansas, on limestone rocks. It deserves a place in every garden where it will grow. Its oddity, as well as its beauty, making it an object of attraction.

Centaurea Americana.—At first sight one would hardly recognize in this tall plant, with its large, showy flowers, a sister of the Bachelor's Button of the garden. It is a fine plant, but rarely met with in this county.

Castillija coccinea (Painted Cup).—This is a widely disseminated plant, though not abundant anywhere. I have seen it in two or three places only in this county. It is a unique and beautiful plant.

Euphorbia marginata.—Snow on the Mountain of the gardens is common further west, but is seldom seen in this locality. It is one of our few native plants, the beauty of whose foliage renders them objects of attraction.

Cooperia Drummondii.—It is a little strange that this pretty Texas member of the amaryllis family should have moved its habitat to Southern Kansas. I found, perhaps, a dozen individuals of the species growing in one location only, in a slight depression, on high table land.

Camptosorus rhizophyllus (Walking Fern).—This unique and beautiful fern, if not rare, is so fastidious in its choice of a home that it is abundant in a few localities only. I found it covering a few limestone rocks in a cold, damp place where the sun never reaches, a forest being on one side, and on the other a perpendicular wall of rock fifty or sixty feet high.

THE LAW OF VARIABILITY.

BY JEAN SISLEY, MONPLAISIR, LYONS, FRANCE.

It is admitted by nearly all who have studied the laws which govern the vegetable and animal kingdom that variability is the universal rule. If I say nearly, it is because a very eminent horticultural writer, whom I esteem, has written recently that reproduction is the rule and variation an exception. But in support of his opinion he has not quoted one example, nor explained why there are not two grains of sand of the same size or the same weight; why there are never two leaves of the same tree identically alike, nor two seeds of the same pod producing two plants in every respect the same; why we never meet two twins resembling perfectly. Time and reflection, and particularly observation, will, it is to be hoped, settle this question for the interest of science and progress.

I have been myself for a long while in error. I attributed the variations obtained from seed to the interference of insects, and thought that when rambling in flowers they carried the pollen from one variety to another, and thus produced crossings. But my friend Carriere, editor of the *Revue Horticole*, of Paris, made me perceive my mistake by calling my attention to the natural law of variation.

I felt very much obliged, but as a free thinker in all matters, and believing only what is demonstrated by irrefragable facts, I searched for proofs and addicted myself particularly to study roses, and I soon perceived that nearly always the natural fecundation takes place before the expansion of the flower buds, and that consequently the intervention of insects was of no avail. What makes me desirous to call the attention of rose growers to this subject is, that notwithstanding its evidence, the law of variability is not generally perceived, principally in horticulture, and because it is in the vegetable kingdom, that there is the largest field for study. Is it not variation that produces all the pleasures in expectation by the hopes we entertain of obtaining something new by sowing?

It is chiefly in the rose tribe that variation has, without our intervention, given us so much delight, by the numerous and beautiful varieties obtained since the beginning of this century.

This natural result has induced some rosarians, amongst which we must cite Henry Bennett, to apply themselves to artificial fecundation, an art which is yet in its infancy, and often ill-practiced, but which will certainly lead to marvels, by judicious selections. A natural fact of variability which has often been produced, and generally passed unnoticed, is dimorphism, commonly called sport or accident. Why a sport? Why an accident? Because the law which has produced them is yet unknown.

Some say that those variations are produced by an unhealthy state, others by over-culture. I suspect them all to be in error, and tell them "seek and you will find."

In the rose tribe some very remarkable sports have sprung up recently—Mabel Morrison, White Baroness and Merville de Lyon, all three with white flowers, issued from Baronne de Rothschild, which has pink flowers.

Tea American Banner, with striped flowers, issued from Tea Bon Silene, and very different in habit from the type; and lately Peter Henderson wrote to me that he had found a dimorphism of Tea Perle des Jardins with the color of Tea Madame Falcot; and it is very likely that very often such reports have occurred without being noticed, and will occur again; and I therefore engage (and it is why I write these lines) all the rosarians, and

particularly amateurs, who have more leisure, to pay attention to the slightest deviation they perceive, and to endeavor to fix it by budding or grafting.

[Few good observers of nature have any doubt in these days that the principle of variation exists in nature independently of seminal influence. In Germantown there are several generations of the English oak, all from one single parent tree, which show as many variations as could be found in a wood in Europe. M. De Candolle has recently called the attention of European scientists to this fact in the proceedings of a learned society in Geneva.—Ed. G. M.]

THE NEW BOTANIC APARTMENTS AT CORNELL UNIVERSITY, ITHACA, N. Y.

BY W. J. JOHNSON, ITHACA, N. Y.

For some time building operations have been going on back of Sage College which doubtless have attracted far less attention than they would have received had they been carried on at a more prominent position upon the campus. The building is an addition to the rooms of the Botanical Department, together with a conservatory for plants and flowers.

The new botanical building, though now forming a part of the original structure, has two entrances, one leading into the special laboratory, and by spiral stairs to the room for general students above, and the other intended exclusively for ladies, and opening into a cloak room.

The first floor comprises a private office and the special laboratory previously alluded to. This room is connected with the old laboratory by a large arch, and possesses an abundance of north light, so necessary to microscopical work. The desks are fastened to the wall, thus avoiding all jar from movements over the floor.

Passing up stairs, we enter a large room handsomely finished in hard wood, and having from its peculiar ceiling the appearance of a dome. Numerous windows upon three sides render the light ample, even in the middle of the room.

Sufficient accommodations will be afforded for sixty students, and this apartment will be devoted to the general work which the lectures upon this subject requires. Through a wide archway communication is afforded with the Botanical Museum. The basement is to be neatly furnished and well lighted. Besides furnishing a storage place for coal, this part of the building will contain the boilers, by means of which the conservatory is to be heated, and will also be used for potting. Immediately adjoining these rooms will be the conservatory. This structure will contain five divisions or departments for different uses. Entering under a handsome porch, the visitor will find himself in a structure with a high roof. This apartment is to contain tall plants such as palms, and will be known as the "Conservatory." At the right, and connected with the former by large doors, is the "Greenhouse," or department intended for plants that require a low temperature. Opening on the left of the conservatory is the "Stove," not deriving its name, as one might imagine, from the method of heating, but from the high temperature to which the plants within it will be subjected. Still further to the left will be two parallel houses for the growing of slips and cut flowers.

The heating of the entire building will be by hot water, the workmanship and materials will be of the best, and the latest scientific knowledge will be employed in its construction.

The estimated cost of the improvement is $15,000, which is paid by Hon. H. W. Sage. The additional space which these changes promise will render much more effective the work of the Botanical Department.

ON THE ABSENCE OF TREES FROM THE PRAIRIES.

BY D.

Your notes from a man who has never lived on the prairies, brings to my mind discussions of ten years ago, when a good friend of mine, an excellent man, stated in an essay that the willow, the cottonwood, and the soft maple must pioneer the way for many generations on the prairies, and fit the soil and sub-soil for more valuable woods. When I took exceptions, and undertook to show that these three trees had the advantage of other trees only in the way of distributing their seeds, to account for their being more abundant than others, as the willow and cottonwood seeds were carried everywhere by the wind, and the soft maple seeds floating on the streams so that they could be gathered by bushels in the "bayous;" they could take hold and root in places where the fires could not reach them; that all three of them ripen their seeds in early summer and germinate immediately. He squelched me by saying he was brought up on the prairies.

I was so much interested in this matter that I wrote him afterwards, wanting it discussed in the *Prairie Farmer*. He replied giving the names of

several men who stood high as geologists, &c., who entertained his view of the matter, and so it ended.

When I first came West it was the opinion of the pioneers that "tame grasses" would never succeed on the prairies. At that very time "tame grasses" were seen coming up along the roadsides where, a chance seed got scattered, and the fires were kept out so as to give it a chance to spread; for be it known that neither tame grasses, nor hardly anything else, will bear the fire and thrive on it like the indigenous perennial prairie grasses; they grew more luxuriously when burned once every year than since the fires have been kept out. The roots of the prairie sod are well protected from fires; indeed, it would take a hot fire to burn them after being dug up; but you will find that after the tame grasses have begun to work their way they will stay there. It is just so with trees, not only cottonwood, poplar and willow, but oaks, hickories and walnuts, &c., as well. While some men "brought up on the prairies" have fallen in with the views of Prof. Whitney and others, seemingly not taking the trouble to look at the trees already growing on the prairies, you find all the practical experienced men holding your views. Arthur Bryant, in his work on forest trees, says that "the black cherry, Prunus serotina, is rarely found of so large size in the prairie regions of Illinois and Iowa, although they are well suited to its growth; the reason appears to be that the fires that formerly ravaged these regions destroyed it more easily than the oaks and hickories."

This Black cherry is seen along the fence rows now far into the prairies, of large size, bearing seeds that are dropped by birds alighting on the fences far into the prairies, and, by the way, I think it one of the most valuable rapid growing trees for the forester.

How any man can see Mr. Bryant's avenues of sugar maples, over two feet through and meeting across a four-rod road, and fancy that prairie land will not produce valuable trees without first being fitted for it by growing generations of cottonwood, poplar and willows, is beyond my comprehension. A great deal of this talk about only planting trees on such ground as you find them growing on naturally, will not bear very close scrutiny. Such trees as cottonwood and elm are only found naturally in moist places, because the seeds ripening in spring can only germinate in moist places; but plant them on dry ground they make an excellent growth. You will see fine, large elms in New England and elsewhere, growing on dry ground, but naturally you only find the seedlings on moist ground.

But what is the use of calling people's attention to little seedlings if they cannot be convinced by seeing valuable timber trees, two to three feet through, and forty to sixty feet high, that have sprung up on the prairies within the past fifty years?

FOOD OF THE INDIANS.

BY GEO. S. CONOVER, GENEVA, N. Y.

As an indication of the domestic economy of the Indians in utilizing various articles of food, not for sustenance only, but to gratify the palate as well, the following will be of interest.

Father Fremin, a Jesuit missionary among the Senecas, narrates that in the autumn of 1669, "owing to the unusual abundant harvest of walnuts this year, the joy of the people is so great that one sees scarcely anything but games, dances and feasts, which they carry even to debauch, although they have no other seasoning than the oil."

The fact that Father Fremin gives the custom such a passing allusion, indicates that the use of the oil was well known.

Galinee, who visited the Senecas in 1669 with La Salle, says, "Another of their favorite dishes is Indian meal cooked in the water and served in wooden bowls, with a small portion of sunflower, nut, or bear's oil."

La Mercier (Jesuit Relations, 1657), alludes to the process by which the Indians extract oil from the sunflower, while from similar sources we are informed that the butternut, black walnut and shag-bark walnut were much prized by the Indians as an article of food, and especially the extracts made from them for seasoning.

In a representation made by La Salle in 1684 (N. Y. Col. Doc. ix, 217) in relation to Fort Frontenac, is the following: "Around the lake (Ontario) are to be found wild apple trees, chestnuts and nuts from which the Indians extract very good oil; also divers sorts of grain, mulberry, plum and cherry trees."

In July, 1750, the Moravian missionaries, Bishop Cammerhoff and Rev. David Zeisberger, were regaled by the Indians at Onondaga with "chestnut milk," and the next day "with Indian corn and nut oil, a new dish to us, but which we found very palatable."

What can "chestnut milk" be? There could be no chestnuts in July. The translation of the Cammerhoff journal was made by a lady teacher in Bethlehem, and furnished us within the past

year by Bishop de Schweintz, and was very carefully done—the original is in German.

In the narrative of the captivity of the Gilbert family, Rebecca Gilbert states that in the autumn of 1780, "when they arrived at their settlement, it was the time of gathering their crops of corn, potatoes, pumpkins, and preserving their store of hickory nuts." Another of the captives, Thomas Peart, says, "When they had loitered at home a few days, they set about gathering their winter store of hickory nuts; from some of them they extracted an oil, which they eat with bread or meat at their liking."

EDITORIAL NOTES.

ON THE LARVÆ OF THE CODLING MOTH.—The Rev. N. Coleman, of Berlin, Conn., notes in the *New England Zoological Quarterly* the following:

"As is well known, the early brood of the Codling moth, Carpocapsa pomonella, pass through all their changes in a comparatively short period, while the late brood do not produce the imago till the next spring. It is not so well known, probably, that the late brood remain in the larval state till spring. From some observations made the past season it seems certain that this is the case. While looking after Canker-worm moths, November 29, 1881, I found a cocoon of a Codling-moth under a piece of bark on an apple tree; and on opening it the larva was found to be unchanged. Another cocoon was found April 25, 1882, and on examination the larva in this was still unchanged. Just how much longer it would have continued in the larval state is a question I cannot now answer."

NEW HYBRID SILK MOTH.—Mr. Alfred Wailly, whose reports on silk-producing and other Bombyces reared by him have been published in this *Journal*, has submitted to the Council specimens of cocoons and moths of a new silkworm, which he has reared by the crossing of Attacus (Antheræa) Roylei, female, the Himalayan oak silkworm, with Attacus (Antheræa) Pernyi, male, the North China oak silkworm. The resulting hybrid is larger than either of the parents. Mr. Wailly writes that "the larvæ of the hybrids were reared with the greatest success in France, Germany, Austria, England, Scotland and United States of North America, and everywhere splendid cocoons were obtained. This year (1882), in April and May, the moths of this hybrid emerged from the cocoons in equal proportions of male and female, all perfect insects, which paired with the greatest facility." He concludes by saying: "Contrary to what has taken place with the crossing of different species of silk-producing Bombyces, I have this time produced a new species, which is larger, stronger, and I think superior in every respect to the parent species, and susceptible of reproduction." Some notes on these hybrids were read before the Entomological Society on May 3, 1882, by Mr. W. F. Kirby.—*Society of Arts Journal.*

ROSA MINUTIFOLIA.—We have before us a dried specimen in bud of this beautiful little thing, recently discovered by Dr. C. C. Parry, in Lower California. We suppose the ladies will exclaim, "Isn't it cute!" when they see it, or perhaps, "The little dear!" We shall pardon them for these phrases, for we feel like joining with them. The little "moss" around an ordinary bud, has always given a new value to the ordinary rose; here we have a bud set among leaves which are all like mossy beds. We are glad to know that Dr. Parry has recently succeeded in getting a good supply of roots, and which are now growing nicely in his garden at San Diego, California, so that we may soon see it in culture everywhere, as well as this little bud in a dry state.

THE NAME ARBORVITÆ.—Why Thuja occidentalis came to be known as "Arborvitæ" has long been a puzzle to the botanists. In the proceedings of the Academy of Natural Sciences of Philadelphia, just issued, there is a note showing that the tree was distributed by King Francis the First, of France, under the name of Arbre de vie, between 1534 and 1547 (when he died), and that it was probably received through Jacques Cartier's expedition. Reference is made to the Indian remedy which, during the terrible winter sufferings of the band, saved the lives of a remnant from death by scurvy. This tree, compared by Cartier's editor to a French oak, Quercus ilex, in size, is supposed by modern botanists to have been the white spruce, Abies alba, and that the remedy was simply spruce beer. The note shows that this is improbable, and the author hazards a guess that the arborvitæ was the life-saving herb, and the facts account for the origin of the name.—*Independent.*

SCRAPS AND QUERIES.

PTERIS TREMULA.—"J. M.," Torrington, Conn., says: In the March issue of the GARDENERS' MONTHLY, in Mr. Falconer's "Notes by the Way," I see he expresses surprise at Pteris tremula being hardy here. The variety mentioned is what I have long known as such. Yet I may be in error as to its nomenclature, and am not prepared to

positively assert it is so. But as soon as this lingering winter entirely disappears, and the verdure again arrays our hills, it will afford me much pleasure to forward a few fronds to you or Mr. Falconer for identification.

GEOGRAPHY OF SOME AMERICAN PLANTS.—In the preparation of the series issued of the "Flowers and Ferns of the United States," the author gave the geographical ranges and other facts so far as the information then at command would permit. The following plants were then only known to the author as being found east of the Mississippi. A St. Louis correspondent finds them now west of the river: Polypodium incanum and Asplenium trichomanes, on rocks, St. Louis county, Mo., along Meramec river, three miles west of Allenton; Rosa Carolina, in swamps, Butler county, Southeast Missouri; Carex stricta, in woods about Allenton, Mo.; Orchis spectabilis, shady, grassy places, Allenton, Mo., scarce; Collinsonia Canadensis, Iron county, Mo.; Asplenium parvulum, Hot Springs, Ark.; Lysimachia quadrifolia, damp woods, Allenton, Mo.; Rhexia Virginica, low grounds Southeast Missouri and Little Rock, Ark.; Silene Virginica, Jackson county, Ark.; Artemesia plantaginifolia, on flinty hills and upland sandy woods, Allenton, Mo., abundant; Vitis indivisa, from Allenton, Mo., Dallas, Texas, south to Arkansas also.

POISON ON CABBAGES.—"Reader," Berwyn, Pa., asks: "Mr. G. Geduldig, Norwich, Conn., in your April number, recommends a mixture of hellebore and water as a good solution for destroying cabbage-worms. Will Mr. Geduldig say whether there is any danger of poisoning the cabbage by the use of such preparation? Hellebore, if I am informed correctly, is poison."

[We fear it is dangerous.—Ed. G. M.]

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

UNDER THE WILLOWS AT ST. HELENA.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

It seems as difficult to disabuse the minds of the unbelieving Thomases of to-day, as it was of old; if once their opinions are formed, no matter how erroneous, they will persistently cling to them. And a belief in there being Salix Napoleana, distinctly different from the common Weeping willow, S. Babylonica, proves there are still believers in this common error. To decide the vexed question so often mooted, I promised some friends to state through the MONTHLY, for the good of whom it may concern, what I know about it.

Some years ago, "when in the course of human events," your horticultural scribe tarried awhile beneath the famous tree, or trees, at Longwood, St. Helena, he took notes of what he saw around. Thus, being on the spot where the debatable willow grew, the real tree or trees were closely examined with a view to ascertain whether S. Napoleana, so-called, differs from S. Babylonica, and if so, in what respect.

Instead of one at the time mentioned, there were two of the most scraggy, forlorn-looking trees imaginable, overhanging the empty vault in which, at one time, the body of the notorious Napoleon Bonaparte lay. Desirous of obtaining a twig or two to examine and propagate, the sable cicerone in charge of the place, with the aid of a long bamboo, to the end of which was attached a boat-hook, jerked off a piece from each tree, and for which demanded the usual fee. To go down to the bottom of the empty tomb,* eighteen feet deep, and moralize, to come up again and drink a glass of sparkling *aqua pura* at Napoleon's spring near by, then to view the Longwood House and surrounding grounds where the ex-emperor lived and languished, was next in order, and according to custom, was gone through. But to make sure nothing was omitted which every well regulated visitor is expected to go through, took a few moments' rest on the worm-eaten and weather-beaten seat under the willows, where the miserable misanthrope used to sit and brood over his misspent life. Feeling satisfied with having properly done the Napo-

*In 1837 Napoleon's remains were removed from St. Helena and reinterred in France.

leonic locale, I retraced my steps along the steep hillside road which picturesquely winds down to Jamestown and the deep blue sea.

While the willow twigs from Longwood were fresh, comparisons were made with others taken from some of the numerous specimens of S. Babylonica, so luxuriantly growing in the many gardens and grounds around. As thus carefully compared, there did not appear to be the slightest difference between them, except the color of the bark on the young shoots was more rubicund than on those of the sickly old trees by the side of Napoleon's tomb at Longwood. But my experience in such matters readily accounted for the cause. That this slight difference of color has often been the means of misleading many people, I have every reason to believe, as the sequel will show.

No matter what mere opinions may have previously been when maintaining there were two kinds, scientific facts have since decided that S. Napoleona (so called) is a myth. To quote the emphatic language of the editor: "Napoleon's willow is the female plant. Nothing but the female has been anywhere grown till the introduction recently of S. Japonica, which is the male form of the same. And Napoleon's willow is simply the willow from Napoleon's tomb, and is really S. Babylonica, or weeping willow."

From the history of the original Napoleon weeping willow, it seems to have been a fair sized tree when the exile first landed from H. M. S. Northumberland, in 1815, and was no doubt introduced with other trees from England some time about 1810.

During my stay on the Island I met the celebrated old soldier Tom Evans, who claimed to have been Napoleon's gardener at Longwood House. And a more loquacious soldier or garrulous gardener I should think never shouldered a musket or handled a spade. This remarkable man, of spear and pruning hook fame, was one of the Peninsula heroes when but a youth of nineteen years of age, and was justly proud of the part he performed in the military achievements of Wellington. It was his misfortune to lose an eye at Toulouse, and after Waterloo he accompanied his regiment, which guarded Napoleon at St. Helena. From my informant's account, "Bony," as he always called him, "was a morose and melancholy man, and, who cared not a gun-flint for a garden; but madame, wife of Gen. Bertrand, did, and took great delight in the cultivation of flowers." The same lady planted several willows by the ex-emperor's grave, raised from cuttings of the original one, which was destroyed by a hurricane which swept furiously over the Island soon after Napoleon's death. And it is probable the two much mutilated trees the writer saw are the only survivors left.

As regards the right or wrong kind of Napoleon willows which travelers take away, it only remains for me to show how they are likely to be deceived in the matter. No sooner does the stranger wend his way towards the landing place at the foot of Jamestown, than he is beset with a noisy multitude of willow venders, whose clamorous importunities to purchase are beyond description. Such a commercial spirit as is evinced by the Island gamins, big and little, is more remarkable than pleasant, especially if the luckless wayfarer is not disposed to buy. They seem to have a large stock of well-rooted plants, growing in jars, cigar boxes, paint kegs, &c., in readiness for the siege. And, as if the sole aim of life was to sell the voyager a Napoleonic souvenir, they persistently pester and plague him into buying. And no sooner does the stranger yield to temptation than the harpies surge around him, *en masse*, loudly vociferating he has been swindled. With a seeming virtuous indignation the transaction is pronounced a shameful fraud. Sorely perplexed, while badgered about to understand the meaning of so furious a hubbub about so small a matter, the hapless victim is forced to believe he has unwittingly bought the wrong sort, the Jamestown instead of the Longwood kind. Feeling chagrined at the motley ragamuffins' duplicity, some more of the right kind has to be bought, and with which the outraged purchaser runs the gauntlet as best he can, to the friendly boat awaiting. The next surprise in reserve to astonish the bewildered *bonhomie*, is the discovery of so many little willow groves, much like his own, scattered about the ship, among which he staggers, much amazed at the senseless sailors cursing the blasted rubbish. Leaning against the taffrail to take a last sad look at the lonely Isle where naught besides the willow weepeth

—"O'er that silent spot."

the writer thanked God for his safety. Standing by my side I noticed a middle-aged, unhappy-looking man, who, assuming a theatrical attitude, shook his dexter finger at the sons of Belial on the strand, and soliloquizingly exclaimed, "I was a stranger, and ye took me in."

The chronicler since then, has often wondered how many of the hundreds thus imported are afterwards identified as the real Napoleon willows.

LEGAL NOTES.

BY H. A. RILEY, ESQ., NEW YORK CITY.

Real Estate Titles.—Owners of real estate in the country are very apt to leave their deeds unrecorded for weeks, and sometimes for a much longer time, without thought of the possible dangers which are connected with such a delay. This is not true in the cities, because there owners of real estate have in general little knowledge of their next door neighbors, and it is not thought safe to rely on the honor of any seller unless the deed is promptly put upon record.

In the country, however, persons often say that there is no need of care in such a matter, because they have known all about the property for years, and in addition have perfect confidence in the seller.

It occasionally happens, nevertheless, that property is lost by the dishonest acts of the seller, in making another sale of the same property, when all might have been made secure by a little promptness in recording a deed. This is even more necessary with a mortgage, because in that case the mortgagor remains in possession of the property, and there is nothing to put a person on his guard except the county records. Readers are advised to look carefully into matters of this kind.

Damages.—In one of the Eastern States a case was recently tried in which damages were claimed for the burning of some "ash lumber" owned by the plaintiff. Upon the trial it appeared that the lumber was birch instead of ash, and an amendment of the complaint was asked for; but the lawyer for the defendant, who seems to have been quite ingenious, argued in this way: "It is true that trees are all different varieties of the vegetable kingdom. So are all our domestic animals different varieties of the animal kingdom. But when the defendant is sued for an injury to a horse, an amendment could not be allowed showing an injury to a cow. There are different varieties of ash and birch, but ash and birch are of different species. An amendment may be allowable changing from one variety to another, but not from one species to another. Thus, an amendment substituting brown ash for white ash may be allowable, but not to substitute birch. Just as you may amend by substituting a Jersey or Hereford for a Durham cow, but not by substituting a horse."

This reasoning does not seem to have had much weight with the judge, for he allowed the amendment, saying: "The charge in either case is for burning lumber, and whether ash or birch, is mere matter of description. The subject matter remains the same. The lumber is lumber still, and in this case the same that was destroyed."

IMPROVEMENT OF YOUNG GARDENERS.

BY N. ROBERTSON, GOVERNMENT GROUNDS, OTTAWA, CANADA.

In the March number of the MONTHLY "Chip" has a pleasant note containing very good advice to young gardeners. The hints he throws out are well-timed and very appropriate. Many young gardeners believe themselves proficient in a few years, settling down contented with a knowledge of old familiar plants and practices, and never aiming at further advancement. If they want to be successful in their calling, they must bring their minds to their work in thorough earnestness, devoting every moment of their time to careful study, determined to overcome any difficulty that may arise. A young man to be successful must give close attention to the work entrusted to him, for if done without intelligent consideration of its effects it will not be of much benefit to him. As "Chip" remarks, a close observance of nature is your surest guide, which the health of your plant will soon indicate. If plants do not thrive, try some other plan of growing them, or some other position for them. This will create a desire for further researches, which will draw you onward, interested, till you attain success.

Never allow yourself to get above learning. A plea of ignorance is often a very good thing, and produces good results. I say listen to your lady employer when she tells about the treatment she gives to her house plants, as from such sources one will derive information, if he only looks for it, or will hear it. Before the young gardener lies a vast field of most important information, opening wider and wider at every turn as he advances, teeming with matter of the most interesting nature, leading him onward from one thing to another until he is almost lost in amazement at the grandeur of nature. Be always courteous and pleasant in your manner, especially to employers. Never refuse to do anything you are asked, although it may differ from your ideas. Mention them to him in the most reasonable manner. If he allows you to try your own way, and you are successful, then you will gain his confidence, and perhaps interest him in helping you forward.

Read you must, or you will soon fall behind the times, as so many new plants are being introduced every year, and new methods of treatment. Write to the papers for information, as you may not only

benefit yourself but many others. When you do write, condense it into as few words as you can, to be understood, for editors have no time to go over lengthy roundabout articles. Write plainly and only on one side of your sheet.

I would especially recommend the GARDENERS' MONTHLY to all. The cost is trifling, and it is always full of fresh, well-chosen articles. Also P. Henderson's last work, containing as it does historical accounts, a glossary of botanical and general horticultural terms and practices with the natural order of plants; all of which are very necessary as a help to the successful cultivation of plants. As a book of reference no one should be without it. Gardeners are much indebted to him for it. Works written on this continent are more useful here than the English, because of the great difference in climate, affecting inside as well as out-door gardening.

RHUS TOXICODENDRON, VERSUS AMPELOPSIS JAPONICA.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

We learn from the February MONTHLY that "our common poison vine, Rhus toxicodendron, is being cultivated in Europe under the name of Ampelopsis japonica," which seems "wond'rous strange" to those who know one from the other.

While recently in England, I frequently noticed when passing through Barton, under Needwood churchyard, what a nice variety of pretty climbing plants loving hands had planted; and were growing up the gray lichen-covered walls of the old village church. And especially beautiful were the heavy masses of the fragrant white flower spangled Jasminum officinale, which richly draped a goodly portion of one side of the structure. And while the humble worshipers within were offering their adorations to God, they inhaled the pure incense of sweet flowers, as the soft summer winds gently wafted their rich odors through the open windows, far more delicious than the smell of frankincense and myrrh.

If the readers think this is a pretty picture of an ancient church, the quaint beauty of which has impressed the looker-on with admiration, and thus to favorably notice it, their conjectures will be true. But when I inform them that within the green churchyard there is a long row of silent chambers where my ancestors, on my father's side, have long been at rest, they will understand why it is so reverently remembered. And but a few feet from the western angle of this antique sanctuary—where my kith and kin are sleeping—closely clinging to one of the buttresses, is a vigorous specimen of the villainous Rhus toxicodendron, or American poison vine. To my surprise nobody seemed aware that its character was almost as bad as the fabled Upas tree, or that there was any danger in handling it, and which leads me to think it cannot possibly be as baneful in England as it is here. The simple villagers seemed sceptical about its noxious properties, and dubiously smiled at the idea of its being capable of inflicting such severe pain upon whosoever incautiously handled it. However that may be, it is nevertheless past my comprehension how any intelligent people could confound the name of the pretty innocent modern climber, Ampelopsis japonica, with that of the vile old poison vine, Rhus toxicodendron—that terrible pest of the rural rambler, whose fierce maledictions are often evoked when feeling the painful effects of the venomous vine.

EDITORIAL NOTES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

EXAGGERATED INTRODUCTIONS OF NEW FRUITS.—A communication by Mr. Bassett in this month's number is very suggestive in its general application. Another correspondent writes in the same strain, though we understand the letter is not intended for publication. To our mind the evil brings its own cure. There is much more refinement in the world than these low-bred people imagine, and the vulgar names to fruits, and vulgar methods of introduction repulse rather than attract lovers of new things.

"THE EUCALYPTUS OF THE FUTURE" is the title of an interesting paper in the March number of the *Popular Science Monthly*, by Dr. Samuel Lockwood.

INFLUENCE OF THE GARDENERS' MONTHLY.—A few years ago, straying into a florists' establishment, the writer saw a copy of the GARDENERS' MONTHLY on the table. Remarking that the magazine seemed to be a regular visitor, the reply was

given that it was taken only for the sake of the advertisements. The florist, as he expressed it, "thought he knew his business without wasting time reading papers." We were surprised to learn recently that he had been lately a regular reader of the articles on steam heating, and that his immense houses will soon be warmed in that way. This is just what the publisher likes to hear. He offers no premiums—no extra inducements—for people to subscribe for the magazine, but to get out a work which every person who loves fruits or flowers feels he cannot afford to be without.

OBJECTIONABLE NAMES FOR FRUITS.—A correspondent suggests that names like Big Bob, Little Satan, Sweet Ducky, and Fiddle-stick, ought to be frowned down by the public, and that if the varieties so unfortunately burdened with ridiculous names should happen to be worth the trouble—which the very fact of their having such silly cognomens is much against—the American Pomological Society would be doing good service by ignoring such vulgar names, and giving proper ones to them.

CARAGANA.—As before noted, the plant which we can buy under this name in many nurseries for twenty-five cents, we may also buy for seventy-five cents, under the name of "Russian Thornless Acacia," in others. The excuse for adopting a few score of common names in the place of one Latin one for a single plant, is generally that the botanical name is so long and so hard: but we see no advantage in this respect in "Russian Thornless Acacia" over Caragana, especially when it costs us an extra fifty cents to learn it.

OLD FASHIONED ROSES.—Those who are approaching the autumn of life, and wandering in their earlier years among the ruins of old gardens, or in those old gardens which it was the pride of their owners to preserve, as in "the good old times," must at least have a fascinating recollection of the old-fashioned roses, which grew and grew from year to year, taking care of themselves in a manner to excite the jealousy of the gardener's art. Then in those days there were cinnamon roses, apple roses, Scotch and French roses, Provence roses, musk roses, and roses of a hundred leaves; and damask roses, with their Maiden's Blushes, York and Lancasters, and others not only boiling over with beauty and fragrance, but clustered about by legends and historical stories of more or less truthfulness, which added very much to the living pleasures which they gave. The writer well remembers one which had the flowers white, but striped with red, which the old gardener used to tell us came into existence about the time when the two rival royal houses of York and Lancaster coalesced, after years of bloody warfare, of which all school children have heard. To distinguish the adherents of each, one wore white roses and the other red ones, and thus we had the famous "War of the Roses." But the roses, dear things, did not fight. It was natural that in their love of peace they should so rejoice at the end of the cruel wars as to produce both colors mixed in one flower, to show their sympathy with the general delight at the peaceful turn of things which the royal unions were to bring about. But the English warriors were not alone to have the whole glory of this striped rose to themselves. The monkish legends claimed it in behalf of the good Saint Francis of Assisi. In his twenty-fifth year he determined to devote himself to a life of poverty and religious utility. The great enemy of mankind, with a foreknowledge of the inroads such a determined character as Francis must make on his kingdom, determined to thwart this intention at all hazards, and threw in his way all sorts of temptations likely to divert him from his chosen track.

At length Satan, desperate, took the shape of a beautiful woman and met him as he was walking in a garden, hoping by her captivating charms to make him repent that he had ever thought of taking a vow to remain an unmarried man. But knowing that he who hesitates under these circumstances is lost, he would not even look on the fair being who stood right before him in the garden path, but turned aside and plunged into a thicket to escape her attentions. But the clump chanced to be of strong plants of the damask rose. In his haste to escape temptation the good young man took no thought of the savage thorns. His flesh was torn to pieces and his blood fell among the roots of the roses. The plants had borne but white flowers hitherto, but the following year blood streaks appeared among them, and this was the origin of the striped Damask rose.

And so it was in those days. It is too bad that cold prose has destroyed the poetry of these old-time tales—it is worse that the good old flowers themselves are gone.

MAYOR KING, of Philadelphia—though a bachelor, is fond of flowers, and the windows of the Mayor's office are gay with pot plants, in a much more healthy condition of growth than window flowers in a large city are apt to be. Among the treasures is a fine healthy specimen of the coffee

plant, especially valued as being the gift of John Hunter, the Receiver of Taxes, and which was raised from seed by the Tax Receiver. Two remarkably healthy Screw Pines are among these privileged plants, and there is a "Dumb Cane-Arum," a much better floral emblem of silence for a mayor's office than the Rose of Harpocrates, since it has the power of enforcing its desire in this respect. Gardening ought to be popular among Philadelphia officials with such an illustrious example. Among the recently elected "City Fathers" are John H. Graham, head of the well-known seed firm of Graham, Emlen & Passmore. Thomas Meehan, the editor of this magazine, is also among the "elect."

WALTER ELDER.—This well-known Philadelphia gardener and horticultural writer died on the 15th of March, somewhat unexpectedly, though advanced in years. He was a native of Scotland, and an enthusiastic lover of his profession. Some thirty years ago he issued a practical work on gardening which had a wide sale, and nothing gave him more pleasure than to freely give the results of his wide experience for the benefit of others.

DANIEL B. SMITH.—If not to let the left hand know what the right hand doeth represents the highest type of manhood, we have surely a good illustration of it in the life of Daniel B. Smith, who died in Germantown on the 29th of March, 1882, in his ninety-first year. Only a few weeks before the writer of this attended the graduation exercises of the Philadelphia College of Pharmacy, an institution so famous over the whole United States that nearly two hundred young men and one young woman, gathered together from Canada to Texas, were sent back to their homes amidst the plaudits of four thousand people who met in the Philadelphia Academy of Music to greet them. Possibly not one of all this vast throng—not one among this large body of successful students, knew that the chief founder of the institution was Daniel B. Smith, much less that he was still living, though then on the bed of death. Possibly no man ever lived who cared less for applause; no one who more truly loved to do good for the mere pleasure of doing it. He was a diligent student through a wide range of science, but botany and horticulture seemed to have the most enduring charms for him. In his seventy-fifth year he took with the writer of this a botanical trip of ten miles to "see once more the Allosurus atropurpurea growing on its native rocks," and at its conclusion remarked that it was probably "the last long trip for me." He was one of the old class of amateur horticulturists, now almost extinct, whose garden traversed by gravel walks, and lined by neatly kept box edgings, was a perfect botanic garden of hardy flowers, which afforded a source of pleasure and floral study through the whole year.

As soon as he found he had to give up his long walks among the wild flowers, he spent the later years pleasantly in going over, correctly naming, and rearranging his large herbarium, which he had the pleasure of presenting to the College which he was instrumental in founding.

In the broad Quaker spirit which animated him, he had very much at heart the giving of an equal chance to both sexes and all colors in the pursuit of knowledge, and possibly few things rendered him the more ready to depart in peace than the announcement, in his dying days, that a young lady, Susan Hayhurst, had for the first time taken the degree of Doctor in Pharmacy in the College which he founded.

No stone will mark the spot where his Quaker brethren have laid him. Full well they know that even granite will melt away. That his friends may do for other neighbors what he did for them was the height of his aspirations for future fame; and it must have been a great satisfaction to him to feel that though the time must come when his name will be forgotten, what he always tried to do in his quiet way would have a beneficial influence on human progress.

FIRST ANNUAL REPORT OF THE CHIEF EXECUTIVE VITICULTURAL OFFICER OF THE STATE VITICULTURAL COMMISSIONERS OF CALIFORNIA FOR THE YEAR 1881.—California has an important industry in her vineyards, and these reports, published by the State, are issued as aids to vineyard progress. Besides the copious notes suggested by every day experience in California, this volume has translations of valuable French works relating to the vine, so that the California grape-grower may profit by whatever is happening in the Old World as well as in his own home. The volume contains one hundred and ninety-two pages.

REPORT OF MICHIGAN STATE POMOLOGICAL SOCIETY.—From Chas. W. Garfield, Secretary, Lansing, Mich. Near five hundred pages of extremely interesting matter. This is the seventh annual one, and published by the State.

BULLETIN OF THE BUFFALO NATURALISTS' FIELD CLUB.—Published by W. H. Hicks, Buffalo, N. Y. It is worthy of note that while scientific serials continue to disappear in the Old World,

they are continually increasing and seem fairly well supported here. This is another new one, with the promise of a long life. Besides interesting original observations on birds and plants, there are other chapters in it of interest to the field naturalist generally. Miss Edna M. Porter, Buffalo, N. Y., is treasurer of the club, to whom no doubt inquiries as to subscriptions may be sent.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

THE AMERICAN NURSERYMEN'S ASSOCIATION.—Our readers must not forget that the annual meeting of this admirable association will be held this season at St. Louis, on the 20th of June. The meetings of the body have been annually growing in interest, and they prove to be very welcome to the communities in which they are held. Somehow the great body of American people have got to know of the profession only through dealers, or town florists, and they seem surprised to find so large a body of highly educated gentlemen among the profession. The leading newspapers vie with each other in giving full reports of the proceedings, and the general influence of the body is much greater than even the founder of the society anticipated. This season the meeting will be under the presidency of Lieutenant-Governor Norman J. Colman, of the St. Louis nurseries, and this means an unusually successful meeting. It is worth a trip to St. Louis by a horticulturist, to see the magnificent Missouri botanic gardens, and we have no doubt the warm-hearted proprietor, Henry Shaw, Esq., will do all he can to give the members of the society a welcome. We should not be surprised if Col. Colman should succeed in getting friends to go on at very little cost to the Rocky Mountains. His energy is fully equal to these pleasant undertakings. One thing is certain, he will leave no stone unturned to make those who stay at home from this meeting eat their fingers with envy of those who have the good fortune to get away.

PENNSYLVANIA HORTICULTURAL SOCIETY.—The fifty-fourth annual exhibition will be held in Horticultural Hall, Broad street, on Wednesday, Thursday and Friday, 12th, 13th and 14th of September, in conjunction with the American Pomological Society, which will be the guest of the Pennsylvania Society. Circulars giving all the details, may be obtained, on the part of the Horticultural Society, of A. W. Harrison, Secretary, Horticultural Hall, and on the part of the American Society, of Prof. Beal, Lansing, Mich. Mr. J. E. Mitchell, 310 York avenue, Philadelphia, as Chairman of the Committee on Reception, will give all the information desired on hotels and transportation. Thomas A. Andrews, Superintendent of Horticultural Hall, will take charge of any articles for exhibition addressed to his care. It is expected that there will be a full meeting of delegates from all parts of the country, and it is believed that this will be the largest and most useful meeting ever held in this country. The proceedings will end with a banquet on Friday evening at six o'clock.

POINTS OF A GOOD ROSE.—During a discussion on roses before the Massachusetts Horticultural Society, Mr. Moore advised the judging of roses at exhibitions by points, and the entering of the points on the prize cards, so that all who read might learn. He considered hardiness, vigor of growth, beauty of form and color, fragrance and constancy of bloom, as indispensable requisites for a hybrid perpetual rose for general cultivation in the garden. It is hard to find all these qualities in any one variety, but the nearer any one comes to them the better the general cultivator will be satisfied with it.

TREE-PLANTING AND FOUNTAIN SOCIETY OF BROOKLYN.—According to a circular before us this is an association for the promotion of planting and protection of trees; the erection of drinking fountains, and otherwise to suggest and carry out measures to render the city of Brooklyn more attractive. The society has rooms where trees, ornamental

plants, flowers, and garden ornaments of every description are received, exhibited and the meritorious encouraged. Just why a body like this should not be called a horticultural society it is difficult to imagine, except that a large number of horticultural societies have degenerated to mere fruit-growers' meetings, and have abandoned all endeavors to foster a spirit of true horticultural improvement in the community. The Brooklyn folks, evidently ashamed of the degeneracy, have thought it best to select some other name.

LIMITING THE SIZE OF POTS IN COMPETITION.—We read in a Boston paper that the prizes for the best six Indian azaleas, the best two, the first and second prizes for four plants in not exceeding ten-inch pots, and the first and second prizes for a single plant in not exceeding an eight-inch pot, were all taken by Hon. Marshall P. Wilder. Some years ago the Pennsylvania Horticultural Society introduced this plan of competition, and, we believe, was the first horticultural society to do so. For some reason this was subsequently abandoned. We are glad that the Massachusetts Horticultural Society is continuing the plan of limiting the sizes of pots. Competition is to encourage good gardening; and the highest test of skill is to grow plants well in limited space.

SCRAPS AND QUERIES.

HORTICULTURAL SOCIETIES.—Mrs. S., Highlands, N. C., writes: "The ladies here have formed themselves into a society, having for its object the laying out and decoration of some grounds which shall be held for public use—planting trees, shrubs, flowers, &c. They first called themselves the 'Floral Society,' but some of them, thinking that name did not convey quite the idea of the work they propose to do, urged a change to that of the 'Horticultural Society.' Now other members and the local press object to this, maintaining that it means only a society intending to plant orchards. Webster says, Horticulture means the care of gardens. Has the word lost its original signification? And is the society misnamed?"

[The Massachusetts, New York, Pennsylvania, Maryland or other "horticultural societies" would not feel complimented if told they had only to do with planting orchards. The ladies have correctly named their society a horticultural one, and can afford to laugh at the local critics.

Those bodies which consider orchards and fruit growing only, are pomological, not horticultural societies, and their line is rather with agriculture than horticulture.

The ladies, however, have excuse for mystification. It is not uncommon to find departments of agricultural papers headed "Horticulture," in which nothing but fruit culture and market gardening are treated of, and even some societies called "horticultural," wherein little else is talked about than how to squeeze out the last penny on a basket of "berries," or the last dollar on a ton of grapes. These are exactly the questions for pomological societies or departments, but they come in only for a secondary place at least in a pure "horticultural society."

TEXAS HORTICULTURAL SOCIETY.—A correspondent says: "March 3d, our North Texas Horticultural Society held its annual election of officers. The election resulted as follows: For President, T. V. Munson; Vice President, Edward Perry; Secretary, James Nimon; Treasurer, Willard Robison. Executive Board, the President and Vice President, and three other members chosen by ballot, viz: G. Alkire, A. R. Collins, J. Nimon. Appointment by the President of standing committees for the year was laid over to the next regular meeting, the first Saturday in April.

"The aim of the society is to be a working, educative organization, and our exhibitions are arranged specially with this view. We hope to make our annual exhibition about the middle of July, and are beginning to plan its arrangements, which we hope will lead to a grand instructive entertainment for all who may attend."

MISSISSIPPI VALLEY HORTICULTURAL SOCIETY.—Of the recent meeting at New Orleans a correspondent says: "We had a splendid and valuable meeting of the Mississippi Valley Horticultural Society in New Orleans, February 21–24. Not the poorest feature in it was the complete and enthusiastic fraternizing spirit which pervaded the whole, and was especially observed to freely pass back and forth from Northern and Southern members. 'We are one and inseparable,' was beautifully illustrated."

AMERICAN POMOLOGICAL SOCIETY.—We have several letters from friends referring to the coming meeting of this distinguished body in September. Col. Wilder expects to be present in person, and is full of enthusiasm at the prospect of again meeting his many friends. The circulars giving details have recently been issued.

THE
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DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

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FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

AMONG THE FLOWERS.

BY VALENTINE BURGEVIN, KINGSTON, N. Y.

I desire to make a few remarks relating to horticulture in the first part of this century in Germany. The love for flowers is as old as history. Each nationality or class had and has its peculiar preference for certain kinds of flowers. The Chinese and the Indians worship the Nelumbium speciosum—Lotus flower. The English have the Rose, the Scotch the Thistle, the Irish the Shamrock, the French the Lily, the Germans the Oak, the Swiss the Edelweis, the Southerners the Palm, the Mexicans the Cactus, etc. They selected a certain flower or leaf as a symbol for merit or regard, to be used on special occasions. They adorned the head of an artist or a hero with a laurel wreath, presented the bride with orange blossoms or a sprig of myrtle, and gave the parting one a forget-me-not. They endowed each with a symbolical meaning. The scarlet represented love; white, innocence; blue, hope; yellow, envy, etc. The Violet was indicative of prudence; the Heliotrope of devotion and the Tulip of beauty. In the latter part of the last century some learned men as Linnæus, Jussieu and de Candolle framed that part of knowledge into a regular system, (Botany,) as a third part of the history of nature, as a foundation to build later discoveries of science upon.

The gardening of those days was quite different from that of to-day. A plot, whose dimensions were governed by the circumstances of the owner, at some distance from the dwelling was fenced in and locked. Shrubs, lilacs, syringas, snow-balls, hawthorns, and golden chain (Cytissus laburnum) were general favorites. Honeysuckles, Wistarias, Boursalt roses, Dutchman's pipe, and Clematis were planted and led to run up framework and pillars. A variety of roses was set out, the old cabbage rose, moss rose, a half double white and dark red, and double, yellow Persian, a splendid eglantine whose flowers were blood red in the inside petals and yellow on the outside, and also a yellow flowering eglantine. Centifolia minor and a still smaller rose of the same character, pink and dark red, were of the greatest ornaments to our gardens. We called them the Pentecost rose and they were always in bloom. At that time too, a pink monthly and tea rose were seen in gardens. The wealthy had in their gardens roses of manifold varieties which they imported from France, and with which they ornamented their pleasure grounds. Elegant perennials; double pink, blue and white hepaticas; snow balls, saxifragas, crocus, tulips of beautiful shades, narcissus, jonquils, crown imperials, lily of the valley, purple and

white violets and pansies were the spring flowers, and were followed by splendid beds of ranunculus, anemones, alstromerias, carnations, handsomer than we have them to-day. Stock gillies, precious wall flowers, asters and balsams were planted in beds bordered with double daisies, dazzling primula veris, Spanish grass, auriculas, pinks, blue dwarf iris and boxwood. The white lily and golden candlestick grew luxuriantly, dwarf delphiniums, monkshood, lychnis calcedonia, double hesperis matronalis, aquilegias, were of many varieties and grown to perfection. The hardy phlox and that handsome dark red peony as well as a large collection of iris, but rarely the handsomest of all, the Iris susiana. When dahlias were introduced from Mexico, they were highly valued. The possessor of a plant like that looked upon it as a treasure. Verbenas were first only of two kinds, melindris and cœrulia; and although a great deal thought of at that time they were replaced by an endless and beautiful collection of their sisters.

I cannot refrain from mentioning a few plants with which I have been acquainted and which made a deep and lasting impression upon my young day observations:

First—An eglantine rose, a large bushy plant whose foliage spread spicy and agreeable odors, whose flowers were blood red inside petals, and yellow on the outside. There was not, likely, a more charming bush than this rose was when in bloom. Its blossoming time was short, but rich, blooming and elegant.

Second—A perennial spiræa (Venusta) which I saw only once in a florist's place. The plant when full grown is from three to four feet high, the flower about eighteen inches long, a perfect bouquet. It was of a deep pink color somewhat like sp. lobata, the form like sp. Billardi, but close like a bloom of colored pampas grass. I never saw a more graceful flower and it imparted a heavenly enjoyment.

Third—A delphinum perennial with very large steel blue flowers; it was the largest part of summer in bloom, and far handsomer than D. chinensis or formosum.

Fourth—A perennial aster about eighteen inches high and bloomed the latter part of summer, it was a beautiful, perfect, semi-double purple flower as large as a German aster, but a delicate grower.

Fifth—Another perennial whose name I was told was Tropæolum canariensis. It was between three and four feet high, clover-like, and blossomed in July. It was covered with little yellow flowers shaped like a canary bird—a very interesting plant; but this, as well as some others, has disappeared to make room for newer and more fashionable plants, and now only exists in my memory. I have not seen one of them in thirty-five years.

The hedging of the gardens was delightful to look upon. Long rows of clipped trees, hedges, evergreens and shrubs were sheared to various forms. Orange and lemon trees, laurel and pomegranate, oleander and myrtle were placed in tubs and stone receptacles. Garden seats were placed at convenient places between beautiful fountains unexcelled at the present day, and which were playing at certain times for the enjoyment of the visitors. The above mentioned vines were skillfully trained over lattice-work forming shady garden houses. There were allegorical groups and single statues representing mythology and horticulture. The large lawns were bordered and planted with shade and ornamental trees and evergreen shrubs such as are described above. There were carriage drives all around the park. Perennials in the center and the balance of the bed filled out with annuals, were planted on both sides of straight plots. Entrances to residences and balconies were generally ornamented with large numbers of plants in tub and pot, and caused a royal appearance. From an emperor's palace to a laboring man's cottage flowers were cultivated. There may be a reason or an excuse for a man not cultivating flowers, but if a woman does not love flowers she cannot be sociable, she lacks heart and is never amiable. Certain clubs and corporations in convents made a specialty of growing and generating varieties in classes of plants, and raised them to perfection, while all plants of the known world were exhibited in royal gardens. Camellias were raised in one place, azaleas in another, pelargoniums in a third, geraniums, auriculas, alstromerias, stocks, wall flowers, sweet williams, primulas, tulips, asters, balsams—whichever kind was preferred—were attended to with the greatest love.

(To be concluded.)

IMPROVED POLYANTHA ROSES.

BY ANTOINE WINZER, WEST GROVE, PA.

I send you by to-day's mail a few blooms of the new Polyantha rose Mignonette, also two small plants of the same variety. I considered it last winter the finest novelty we had in new roses. The habit of the plant is good. It is a very free

bloomer, producing flowers in open ground from June until severe frost stops them in Fall. It will no doubt prove as hardy as Anna Marie de Montraval, enduring our winters with slight protection. There is another Polyantha rose not well known, Mdlle Cecile Bruner. When I first bloomed it two years ago, I did not think it was very nice, as it showed a kind of salmon pink color; but on trying it out in open ground last year on a large scale it proved to be one of the finest roses in our collection of its class. The color of the flowers was better than under glass, showing a fine pink, and the clusters were very fine; some containing as many as twenty-five distinct flowers about an inch in diameter and double; the plants were in bloom until November. We have also a great many other New French and English roses that are very fine.

[Certainly very pretty. These roses make bouquets in themselves, and this new class will assuredly become very popular.—Ed. G. M.]

NOTES FROM VIRGINIA.

BY MAX, STAUNTON, VA.

Have had what may be called an open winter, the thermometer never marking lower than 10° F. above zero. Occasional snows and sleets but no snow-storm leaving above three inches on the ground, and that generally dissipated by the sun within two or three days. Yet our roses are more severely injured than for years past. Teas and Noisettes killed to the root; Hybrid Perpetuals cut back to within six to fifteen inches of the ground, while evergreens have not suffered at all—even Euonymus japonicus (which is generally injured) shows no sign of rough weather. Why is this? Devoniensis and Bon Silene roses withstood the winter while T. de Luxembourg and Safrano (all adjacent) were destroyed.

The white moth is attacking sweet scented Geraniums here and not touching Coleus in the same house. Will you or some one of your correspondents who have used Pyrethrum against the cabbage worm give manner of use and results?

[Plants which stand a temperature of some degrees below freezing, do not die from "frost," that is cell-rupture, as geraniums, tomatoes, and such plants do; but from evaporation of the juices faster than the roots can supply them. Just how evaporation injured the roses, local examination only could show.—Ed. G. M.]

CLIMBING PLANTS—AMPELOPSIS.

BY J. R. T., NORTHAMPTON, MASS.

There is no out-of-door decoration upon which the eye rests with more gratification than the graceful climbing plants, and where beauty of foliage is combined with elegance of bloom the effect is greatly augmented. Some, however, of the most desirable of this class of plants, bear but insignificant blossoms. The many yearly additions to the florist's catalogues put it within the means of every one to ornament and beautify his homestead, be it ever so humble. For this purpose there is nothing superior to the hardy climbers or creepers, whether to cover an unsightly fence, to festoon an artificial trellis or to adorn the dwelling house itself. There are scores of them so well known that it is almost superfluous to mention any, yet some of the oldest, most familiar and altogether the best, seem to be least cultivated. I will therefore, with your permission, Mr. Editor, name a few (in this and succeeding articles) that succeed well here, in the hope that others may be induced to follow the example of the writer. Should any do so and obtain half the satisfaction he has from the few under cultivation on his own premises, he will be amply repaid.

One important point in order to obtain the best results, is the selection of plants that will successfully resist the cold of our New England winters; plants that can take care of themselves. Among climbers I know of none that affords greater satisfaction than the Ampelopsis qiunquefolia, Virginian creeper. It belongs to the vine family and is thus described by Gray:

"Calyx slightly 5 toothed; Petals, concave, thick, expanding before they fall; Disk none; Leaves digitate, with 5 oblong, lanceolate sparingly serrate leaflets. Flower-clusters cymose. Tendrils fixing themselves to trunks or walls by dilated sucker like disks at their tips."

It is abundantly hardy, of vigorous growth and of graceful form. Its flowers are insignificant and its berries small and scarcely noticeable. It is peculiarly adapted to the ornamentation of brick walls, its little disks or suckers at the extremity of the tendril, clinging with great tenacity to the mortar and brick. It requires no training or fastening. Plant it in moderately rich soil, give it but ordinary attention and it will rapidly climb the wall. To me it is surprising that a creeper, combining as it does so many elements of attractiveness and withal so easy of cultivation, should not become more popular. I know not how it may be

in other places, but in this town, till last summer, I knew of but a single plant of the species in the neighborhood. The bright, glossy foliage of the new growth, contrasts admirably with the darker green of the leaves upon the older wood, the whole spreading fan like upon the wall, shading from dark to light and tapering gradually from the larger leaves to the minutest tendrils, all bright, fresh and shining. Then as autumn advances it changes to a magnificent crimson and purple. So conspicuous and attractive is it that almost daily some passer by inquires its name and remarks its beauty. A horticultural writer says of it: "As a rapid growing plant it is much prized in England and on the continent of Europe, and employed as it is in this country to cover walls or to climb old trees, festooning itself with elegant freedom from branch to branch." It needs but ordinary care and though in severe winters the ends of the shoots may die, the succeeding summer's growth quickly recovers lost ground and rapidly extends far beyond. I speak of this well known species, because it is reliable, easily obtained, costs but a trifle and will afford genuine pleasure to all lovers of the beautiful. It is known as the American Ivy, occupying in American woods and gardens a similar position to the Ivy of England in that country. It is sometimes called the five leaved woodbine, erroneously, however, as the woodbine properly belongs to the Honeysuckle family.

The tendency at present seems to be to cultivate foreign plants at the expense of our own native species. Many of these are so tender that they can with difficulty be made to live through our winters, and even then it is questionable whether they are more beautiful. A finer creeper than the Ampelopsis, one combining so many excellencies, can nowhere be found.

EDITORIAL NOTES.

DOUBLE TUBEROSES.—These often degenerate. Just why they do so has not been clearly demonstrated. The single ones, however, have this advantage, they flower nearly two weeks earlier than the double ones.

CITY SQUARES FOR PHILADELPHIA.—The city of Philadelphia, with its 130 square miles, has one large park of 3,000 acres on its west boundary, of which it is justly proud. In small squares for the poor and for children who cannot take a day's journey to the Park, or if at all but a few times a year, it is singularly bare. It has but Franklin, Logan, Rittenhouse, Independence, Washington, Jefferson, Passyunk and Norris, and these provided by the wisdom of the more immediate successors of William Penn. Since that time miles and miles of streets have been built, with the only public ground being the public highways.

At the meeting of the City Councils on April 19th, Councilman Meehan offered an ordinance providing for small parks and squares for the future growth of the city. It directs the Department of Surveys to so revise the plans of the city as to block off plots of ground not less than ten nor more than twenty acres, three or four miles apart. The city is to set apart a marginal strip around each plot for building purposes and apply the proceeds for building new parks. The property to be taken is to be assessed as road damages are. The bill was referred to the Survey Committee, and by them referred to the City Solicitor, to decide whether the city had authority to take land for this purpose.

CERCIS JAPONICA.—This proves to be one of the most desirable of very hardy shrubs. It will probably become common as the "Japan Judas tree."

AZALEA MOLLIS, introduced from Japan, might have been called new here half a dozen years ago. At the Arnold Arboretum it endures the winter quite as well as the Ghent azaleas, and flowers superbly and promises to supersede them, the flowers being finer in size and form. At the arboretum a large number of seedlings have been raised, from which we may expect plants every way suited to our climate.—*Mr. Falconer in Country Gentleman.*

A GRAFTED ROSE.—At a recent meeting of the Massachusetts Horticultural Society, William H. Spooner, chairman of the flower committee, called attention to a plant of General Jacqueminot rose, exhibited by Jackson Dawson of the Arnold Arboretum. It was grafted a year ago upon a Japan rose, and now has twenty-five blossoms and buds.

ROSES GRAFTED ON THE MANETTI STOCK.—Over a quarter of a century ago, no nurseryman in America could get enough Manetti stock to supply the demand, but they have long been wholly abandoned. The American florist of today hardly knows what the Manetti stock is. It was not that is was not a good stock for the rose, but the tendency to sucker was so strong, and the leaves and growth so much like "tame roses," that the majority of amateurs, and many florists did not find out that they had only the "wild

things" left, till every graft had died. People would not buy a grafted plant at any price, and hence the stock went into oblivion. It seems very strange to those not acquainted with the slow progress of the experience of "foreigners" through the British Islands to have the rose growers of that region paying for their experience as freely as if it was all wholly new. The *Garden* now tells us:

"It is, in fact, a great mistake for amateurs to grow roses on the Manetti stock, for the following reason: One day a gentleman asked me for advice about his roses. He said three years ago he bought six dozen rose bushes; they flowered well the first year, but he got very few flowers afterwards. I went with him to see them, and from what I saw in his garden I thought he was a clever man. It was a beautiful place, and he appeared to be quite a judge of a good many things; but when we came to the roses I discovered they were not rose trees at all, they were Manetti stocks; indeed, there were only one or two pieces of rose to be seen."

WHITE PYRUS JAPONICA.—The white Pyrus japonica of American gardens has a tinge of pink in it. By the following from the *Garden*, a pure white has appeared in England:

"A new white variety of Cedonia japonica now in full bloom in Messrs. Veitch's nursery at Coombe Wood, under the name of nivalis, is among the most chastely beautiful of early flowering shrubs. The flowers are identical with those of the ordinary kind, but are as white as driven snow, and it retains its purity throughout the flowering season, thereby differing in an important degree from the common white variety of Cydonia alba, which changes to a pinkish color by age. This variety nivalis is, like the original, a very free bloomer, and long shoots are perfect wreaths of white, so abundant are the blossoms. Beautiful as these snow-white flowers are on the bush, they seem to reveal additional beauty when cut and associated with a little greenery, and they last a considerable time in water and half-opened buds fully expand, though not such a pure white as those that expand in the open air. As a companion plant to the high colored varieties of the favorite Japanese Quince the plant under notice is recommended. For wreath and other floral devices it is invaluable at this season."

LILIUM HARRISI.—This is a variety of Japan species, Lilium longiflorum, but has become naturalized in the island of Bermuda. Importations have been made from there and sold under the name of Bermuda lily.

FORSYTHIA SUSPENSA.—This is the F. Fortuni of English catalogues, as the leaves are both simple and trifoliate on the same plant. It is a far more graceful plant than the old Golden Bell, Forsythia viridissima, and flowers earlier. It blooms, indeed, under a very low temperature, and under warm shelter will be quite as early as the Japan jasmine, Jasminum nudiflorum. It can be trained on trellises against walls like the jasmine. It also may be led up on one stem to make heads, when it is far more interesting than the Kilmarnock willow.

PARIS GREEN ON LARGE TREES.—At a recent meeting of the Massachusetts Horticultural Society, Mr. J. W. Manning, after speaking of the universal prevalence of destructive insects, one following another through the season, said that the most effectual remedy for the canker worm is London purple or Paris green, the first being preferable. Being lighter it will remain suspended in the water better, and its color is such that it can be seen better. A slightly heaping teaspoonful to three gallons of water, or a pound to two hundred gallons, is about the right proportion; but the strength varies, and the exact quantity must be found by experiment. If too strong it will kill the leaves, and if not strong enough it will not kill the worms. It should be applied in a fine spray, either with a common garden syringe or by a portable pump with hose attachment. The latter may be placed in a wagon, with the poisoned water, for convenience in moving. All the foliage should be sprinkled. Sometimes it is necessary to make two applications, but frequently a single application will clear the trees for years. In the grounds of Amos Hill of Belmont, where it was used in 1878, and those of the essayist, who in 1880 applied it to thousands of apple and elm trees in his nursery, few insects have been seen since, and a second application destroyed these. The best time is as soon as a perforation of the leaf can be seen, but it has proved effectual when the worms were nearly grown.

SCRAPS AND QUERIES.

LAUREL OAK.—A St. Louis correspondent says: "I do not think there is under culture the true laurel leaved oak, L. imbricaria I suppose. This oak grows quite abundantly here in certain soils, or rather situations, and with its glossy entire leaves and symmetrical growth is, I think, by no means destitute of beauty. I have a lot of seedlings, both one and two years, of Yucca flaccida, which I regard as a very valuable yucca, in that it blooms much younger and much more freely than Y. filamentosa, as I have noticed that the latter requires several years after division and

removal before they will bloom, while the former will bloom the second year. At all events, they will throw up ten stalks of bloom to the other's one."

THE JAPAN SNOWBALL.—Hardy as the Viburnum plicatum appears to be almost everywhere, a correspondent from Beaver Dam, Wisconsin, reports that it was killed to the snow line last winter.

AMONG THE FLOWERS.—We give in this number another of the interesting contributions to the Kingston *Freeman*, with some additions for our pages, from the pen of our intelligent correspondent, Mr. V. Burgevin, which we are sure our garden-loving readers will appreciate.

DISAPPEARANCE OF THE NELUMBIUM.—A St. Louis correspondent says: "I have often thought of those former articles in your paper concerning the discrepancy among observers as to the native habitat or former localities of the noble aquatic, the Nelumbium luteum. When I first came here, sixteen years ago, this plant was very common all around the city, growing in numerous ponds, to be met with everywhere. Now it is quite scarce, and on many of these ponds where there were formerly acres of it, now not a plant is to be found—caused by the ponds drying up for one or two consecutive seasons. The plants die out, root and branch, and do not seem to reproduce themselves from seed in the same ponds when moisture returns, although they formerly seeded abundantly. Only in deeper and more enduring water are they to be found now. The same is also true of the Pontedera."

VARIEGATED CELERY.—"T. S. S.," West Troy, N. Y., writes: "I have mailed you two leaves of a variegated celery. The plant is now one year old, and every leaf is as nicely variegated as the samples I send you. It is now growing in a 7-inch pot. Height of plant, from top of the pot to top of the leaf, 14 inches; diameter, 22 inches. It stands the sun well. Please state what you think of it."

[A very beautiful plant, and though a "vegetable," would be no mean ornament in a flower garden.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

STEAM HEATING.

BY JOHN BREITMEYER, DETROIT, MICH.

In reply to Mr. E. Holley's question, page 39, February number, regarding steam heating in greenhouses, I desire to say:

First—In a greenhouse 20x100 feet, or longer, it will require a coil of six radiating one-inch pipes on each side and through the entire length of the house, to maintain a temperature of 65° during a severe cold storm, when the thermometer goes down to 15° or 20° below zero. The main point in putting in steam-pipes is to have plenty of stop-valves, so that heating can be regulated according to the demand of the weather. During ordinary weather, say when the thermometer goes down to 20° or 24° below freezing point, then two pipes on each side of the house would be sufficient to maintain the desired temperature.

Second—My opinion is that two one-inch pipes are better for radiating heat than one two-inch. I explain it thus: The circumference of two one-inch pipes is greater than that of one two-inch, therefore more heating surface, and consequently more heat.

Third—As to the heating capacity of a certain sized boiler the most reliable information can be obtained from a competent steam-fitter. Ascertain how many feet of pipe it will take to heat your house, or houses, and he can easily tell how large a boiler it will require.

Fourth—I find that steam-heating costs about one-fourth more in fuel and double the amount of labor in attending to same, than hot water heating.

Fifth—I find no difference in its working, whether the pipes are in an ascending or a descending position—the condensation of steam in the ascending pipe does not seem to cause any trouble. One of the chief points is to have plenty of power in the boiler, and be careful to keep you pipes above the water-level of the boiler.

Sixth—Our boiler requires attention every two or three hours. It would sometimes last longer, but it is so unreliable that it is safest to watch it regularly. I find it to be the same with nearly all local florists who have steam-heating in use.

Seventh—The style of boiler we have in use is a horizontal tubular; it is claimed that these have the most heating surface, and are, therefore, recommended to be the best.

The above are as accurate answers as I can give from the result of our experiment, and trust it will enlighten Mr. H. and others interested.

It may be agreeable to some of the readers of the MONTHLY to learn how we have our steam-pipes arranged, and how our combined steam and hot water heating is managed.

Our greenhouses, now twenty in number, covering an area of more than 50,000 square feet of glass, are heated by six No. 17 and two No. 16 of Hitchings & Co.'s corrugated fire-box boilers, and two of Meyers' improved hot water boilers. To these we have attached about 12,000 feet of four-inch pipes. As we needed all these houses to grow cut-flowers and could not heat them to a desired temperature for that purpose, and were about to make additions last summer, we decided to put in a steam boiler in order to tests its merits. The boiler is of above-described style, 3½ feet in diameter by 14 feet long, with 54 flues. To this we have attached about 6,000 feet of pipes of various sizes. The four-inch supply pipe leads through a house 20x128 feet; from this branches lead into four different houses with a coil of three one-inch pipes in each house, ascending from the supply pipe. These houses are 20 feet wide and the steam-pipes maintain a temperature of about 55°. When the thermometer goes down to 26° below freezing point in colder weather we add hot water pipes, of which we have eight in each house. In this way we use the steam in fourteen different houses.

Then we have another three-inch supply pipe leading to four houses 10x120 feet each, heated by steam exclusively. In each of these houses we have a coil of three one-inch radiating pipes descending from the supply pipe. The condensed steam is led to the boiler with a one-inch pipe descending to boiler. With all the pipes in use we can maintain a temperature of 48° when the thermometer goes down to 20° below zero.

As steam-heating is now attracting considerable attention and is the topic of conversation among florists, I will proceed to discuss a few important questions on the subject.

First—Is steam-heating really better and cheaper than hot water? As far as our experience teaches we must say no. I will first take into consideration the cost of construction. It is very true that steam can be put in cheaper than hot water, but the question is: Will it last as long? Time will tell! Now comes fuel and labor. It was claimed by one or two local writers that steam costs less in fuel and is better than hot water. I would ask how can these gentlemen make such an assertion when neither of them ever had any hot water heating and do not know what it is. Good steam-heating may be as good as hot water, but I feel safe in saying that it is not a particle better.

And even if it is as good as it is claimed to be, and better than hot water in all points, one more important question is: Will steam heat be as agreeable to plant life as hot water heat? I will mention one case. In the four houses heated by steam exclusively we have carnations. They were looking splendidly until the end of December last. At that time heavy firing commenced and we soon noticed that they were not doing as they should. Although kept quite cool they showed a feeble growth. We put in a lot of cuttings from them and soon found that it was very difficult to root them.

On further examination we found that the wood was "tough;" also that the flowers, after being open two days, would fade away, while those in the other houses heated by hot water would last eight or ten days. Does it not look as if steam had something to do with it?

CYPRIPEDIUMS.

BY ALEXANDER CRAMB, NEWBURG, N. Y.

During twenty years experience in gardening I do not remember having seen or heard of any one growing Cypripediums on blocks, and until last year did not think of such idea.

Having a very sickly plant of C. venustum, which gradually grew less in spite of all I could do, and not wishing to lose the plant, it occurred to me to put it on a block of wood or something similar.

I found among some peat a fern stool which I used instead of the wood. After washing the few poor roots the plant had I wired the plant to the stool, using nothing but moss to cover the roots. This was done about the 10th of June. At the end of July I had the satisfaction of seeing one large fleshy root, and continued to make roots until late in the fall. The leaves made during the time are much larger than the old ones and of a better

color. In December it showed four flowers, and on one of the flower stems is a lateral not yet open.

A neighboring gardener has success with a plant of C. nævium which was very delicate but now improving, showing one flower. This plant is on a block of wood. If any of the contributors to the MONTHLY have tried this experiment I should like to know with what success. How long this class of plants would live and thrive under this treatment is a question. At any rate, when a sickly plant is established on blocks it is an easy matter to re-pot again.

[This is a novel idea in Cypripedium growing, and will surely be of great value to orchid growers.—Ed. G. M.]

HEATING PLANT-HOUSES.

BY W. H. PAGE, NORWICH, CONN.

I have some experience in heating greenhouses by flues, hot water and steam, and I suppose all have some advantages over the other, but were I to heat more houses I think I should prefer steam to all others.

If I should attempt to answer Mr. Holley's questions in a late MONTHLY I would say, in the first place secure a good boiler with sufficient capacity to do the work without crowding. If you are to run one low pressure, then two-inch pipe is best; if high pressure, then 1¼ inch pipe will do as well. It is difficult to say whether a five-horse-power boiler is sufficient to heat a certain house, for much depends upon location and exposure; but four houses connected will heat easier than one alone in proportion. One boiler will heat four houses if of sufficient capacity for the business. You can heat one-third more space with steam than by any other process, with same consumption of fuel. I would grade all pipes away from the boiler, that is, let the pipes from the boiler fall about one inch in eighteen inches, with the returns back about the same, so the condensation will follow along with the steam. Then there can be no clashing or noise.

Much depends upon the kind of boilers and connections about how long it will run without attention. Many boilers will not keep steam over four hours without replenishing the fire. All such are not suitable for the purpose. The boiler should not be too high, but should have large fire capacity. In my greenhouse heated by steam, it is in rather a sheltered situation, is a lean-to, and faces south. The boiler is of cast-iron, fifteen-inch grate, with one run of two-inch pipe out under the back side of the bench and back under the front side to the boiler. The house 13x60 feet; say 120 feet of pipe. There has been no trouble in keeping this house at 50° any cold night we have had for the last three years. Never had to sit up with this fire; could always leave it at 9 P. M. and find steam on at 7 o'clock in the morning. With the hot water boiler we have to watch with it all cold nights for the last seven years. I have raised the temperature in this house ten degrees in as many minutes. With ten pounds of steam you can fill the house with it, and it is very effectual in suppressing the red spider.

HEATING BY STEAM.

BY H. WALZL, DENVER, COL.

Seeing the call in the February number for "Practical knowledge of hothouse heating," I herewith submit to you my knowledge of the same.

Before I ever thought of horticulture I went to work in a machine shop to get a "practical" knowledge of machinery, and while there learned the use of steam and hot water for heating. Since I have been in this business I have fired personally with the common flues, with the Dick and Meyers hot water boilers, and with Flinn & Emrich steam-heating boiler of Baltimore, and have seen ordinary horizontal boilers used here for steam-heating.

I think that for hothouse heating the hot water system is the best, for when once the water is hot it retains the heat a long time and gives a more even heat than anything else. Second, it cannot get out of order after once properly put up. Third, it does not require a mechanic to run it (which steam does) and there is no danger of explosion, which there is in steam if the person running it does not understand it thoroughly. Fourth, by the time everything is taken into consideration it is the cheapest.

On a very large place where it will pay to keep a man to fire and attend to the heating, who understands all about boilers, pipes, etc., steam can be made to do the work at much less cost than anything else. But if it is not properly put up it will be an everlasting expense and give no satisfaction.

Where one can attend to it himself and understands it it is very good, but where you have to depend on hired help, who very seldom take any interest in things, and still less often know much about steam, there is no satisfaction to be had from steam heat.

As to the questions asked. First: A one-inch

pipe is just as good and much cheaper than a larger one, except where the pipes are very long and there is danger of the steam condensing before it reaches the end. Second: Where it takes a five-horse boiler to heat one house it will not require more than an eighteen-horse boiler to heat four such houses. Third: I prefer the radiators to receive the steam from the upper end, as in case of very long radiators the condensed water may interfere with the steam.

It is possible to have steam-heating so arranged with automatic valves that we need only attend to it once in six hours. I have done this myself.

DECORATED NAPKIN RINGS.

BY WM. McR., RAPIDAN, VA.

At a dinner party given by my employer, the most admired decoration was floral napkin rings. The rings were formed of loops of the green wire used in making artificial flowers; through the loops sprays of smilax and stems of cineraria blooms were twined. They were very pretty, and were nearly all carried away by the guests as souvenirs.

EDITORIAL NOTES.

HOT WATER TO KILL INSECTS.—In the first volume of the GARDENERS' MONTHLY, probably one of the most valuable papers published was one on the use of hot water in destroying plant lice. Many have thanked us since for giving them such a simple and effectual plan. The following details have recently appeared in the London *Gardeners' Magazine*, and as there are some suggestions in it, not noted in our original paper where 130° was given as the degree of limit, it will be useful to reproduce it here:

"Water is a cheap insecticide insufficiently appreciated, but capable of more extended use than the majority of those who already believe in it are aware. It is quite certain that the best cultivation will not prevent the occurrence amongst plants of such pests as aphis, red spider, mealy bug, and a few of their near relatives. Therefore it will not do to dismiss the subject of plant vermin by saying that good cultivation is a sufficient preventive, though it is unquestionably true that the most natural conditions for vigorous growth are also just those which keep vermin at a distance. We do not intend here to enter upon a general consideration of the subject, but to relate a few particulars of experiments that have been made at Stoke Newington, with a view to determine the extent to which hot water may be employed for the destruction of the insects that most commonly infest plants. The few experiments made have been attended with such promising results that we shall hope to find opportunity soon for repeating them in a more extended and systematic manner. For the present we shall speak of aphis only, and as that is the most prevalent of plant pests, we trust that these remarks will be useful to many readers. It appears, then, that aphides quickly perish if immersed in water heated to 120° Fah. We obtained from various sources plants infested with green fly, and cleansed them by the simple process of dipping. As the experiments were made in the month of February, we thought it probable that aphis might endure in June a temperature many degrees higher than that which proved fatal to them in the earlier and colder season. Hence it became desirable to ascertain the degree of heat the plants could endure in the dipping process. A number of herbaceous and soft-wooded plants were therefore subjected to the process of immersion in water heated to various degrees above 120°. We found that fuchsias were unharmed at 140°, but at 150° the young leaves were slightly injured. Calceolarias suffered at 140°, but the plants were not killed, though their soft tops perished. Pelargoniums were unhurt up to 150°, but the slightest rise beyond that figure killed the soft wood and the young leaves completely. Chinese primulas were injured by any rise beyond 140°, and this at last proved to be the most general maximum, and may be cited as a rule for observance. Centaureas, sedums, saxifragas, thyrsacanthus, justicias, ferns, heliotropes, petunias, begonias, mignonette, and many other plants of soft texture, were unhurt by being dipped in water at 140°, but the slightest rise beyond that point was followed by blackening of the leaves, and consequent disfigurement of the plant, and at 150° the process of killing commenced. About ten years ago we reported in the *Floral World* that Fairy or Lawrence roses, which are grown in quantities in pots for market, could be best kept clean by dipping in hot water, as at 120° the plant is not injured, and every aphis upon it is destroyed. This simple method of removing vermin from plants is, we are quite satisfied, capable of very general adoption, in place of more troublesome and more expensive plans. We shall be glad of any aid our readers can afford towards the reduction to system of the facts of the case. To what extent can we carry on an offensive warfare against scale, red spider, and all the rest of the little foes that plague us in the garden? The question can be better answered by many than a few. It is eminently a question for those who have opportunity and a liking for experiments, and who can afford to kill a few plants, if need be, to make a sure test of the respective powers of endurance of high temperatures by various orders and genera.

LEEA AMABILIS.—Leaf plants, or those which are valuable chiefly on account of beautiful foliage, are still popular, and we have here one of the most beautiful additions that have been made for a long time. It was introduced by Messrs. Veitch of London, who give us the following account of it:

"A very distinct and handsome foliage plant discovered by our collector, Mr. Curtis, in North Borneo. The leaves are compound, each leaf consisting of 4 to 6 elliptic-oblong, sharply pointed, opposite leaflets and a terminal one; they are fully 6 inches long and 1½ to 2 inches broad, with prominent midribs and numerous oblique symmetrical veins branching from them. When first expanded the leaflets are bright crimson tinged with a rich shade of brown and marked with a pale rose

Lcea amabilis.

band along the midrib; when mature they are of a deep bronzy green shaded with brown, relieved by a broad silvery white central band which gives off short branches with every nerve. The novelty of the coloration of this plant and its striking aspect, cannot fail to recommend it to cultivators of ornamental stove plants, to whom it may perhaps be appropriately described as resembling a shrubby Cissus discolor.

TOBACCO WATER FOR INSECTS.—W. H. Spangler in *Vick's Monthly*, believes that tobacco tea, occasionally syringed over infected plants, is a far better insecticide than tobacco smoke.

ROSE MADAM GABRIEL LUIZET.—At the April meeting of the Germantown Horticultural Society, Messrs. Lonsdale & Burton exhibited cut blooms of the new hybrid perpetual rose Madam Gabriel Luizet. This is the one which was pronounced by foreign growers the best of all the roses of recent introduction. In color it reminds one of the well-known La France, is exquisitely sweet scented, and the exhibitors claim it to be an excellent one for forcing.

PEDIGREE ROSES.—Mr. Bennett believes in the natural variation in races; others depend on crossing or hybridizing. Mr. Bennett has been and continues to be successful with his method. An English paper recently says: "Mr. H. Bennett, Shepperton, contributed two flowers of a lovely new seedling rose named Mrs. George Dixon, a large flower with broad, deep petals, of a rich satin-rose color—a lovely bit of color; and some cut blooms of another of his seedlings, W. Francis Bennett, an invaluable dark button-hole or bouquet rose, being neat and pretty in the bud, of a good dark color, and richly scented."

SCRAPS AND QUERIES.

ROSE ETOILE DE LYON.—Nanz & Neuner send buds of this yellow tea rose which confirm the good character we have formerly given of it. It will be a popular variety if its blooming characters equal its beauty.

ROSE MERVEILLE DE LYON.—Nanz & Neuner send a flower of this hybrid perpetual rose, which came to hand April 25. It is a large whitish cupped, and very double rose and seemingly of much promise. The number of new roses is now so great that it is not easy to judge of the actual value of a variety by a flower alone. Habit, free blooming, fragrance and other points go to make up the first-class kind in these days. If this should excel in these points, we fancy there will be few roses to excel this.

HOT WATER FOR SICKLY PLANTS.—A correspondent calls our attention to the following from the *Garden*, and inquires whether "there is anything in it:"

"The *Florist* asks has any one tried hot water as a restorative for sickly plants? and then proceeds to say that M. Willermoz some time since related that plants in pots may be restored to health by means of hot water; ill health, he maintains, ensues from acid substances in the soil, which, being absorbed by the roots, act as poison. The small roots wither and cease to act, and the upper and younger shoots consequently turn yellow, or become spotted, indicative of their morbid state. In such cases the usual remedy is to transplant into fresh soil, in clean pots with good drainage, and this often with the best results. But his experience of several years has proved the unfailing efficacy of the simpler treatment, which consists in watering abundantly with hot water at a temperature of about 145° Fahr., having previously stirred the soil of the pots so far as may be done without injury to the roots. Water is then given until it runs freely from the pots. In his experiments the water at first came out clear, afterwards it was sensibly tinged with brown, and gave an appreciable acid reaction. After this thorough washing, the pots were kept warm, and the plants very soon made new roots, immediately followed by vigorous growth."

To our mind there is a great deal in it. We know to a certainty that sickly peach trees are often restored to vigorous health, by the old-fashioned German farmers of Pennsylvania, by pouring boiling water on the ground about the peach tree. It cools, of course, somewhat before reaching many of the roots. Here, however, it is believed to be beneficial by destroying parasitic insects and parasitic fungi, rather than chemically as suggested by the extract. But let the reasoning be what it may, we are willing to endorse it as good practice.

ROSE CATHARINE MERMET.—"Anxious I." asks: "How is this rose pronounced? Some say it is Mermet, others Mermay. These French names are puzzling to us innocents."

[Anxious Innocent need not be agonized about it. There is no rule for pronouncing any proper name, unless it is accented by the owner himself. Owners of the same name often pronounce it in various ways. Precisely how Catharine pronounces hers we have no means of determining. Seeing no accents we may be forgiven if wrong in pronouncing it as in English—Mermet. If the lady wishes us to say Mermay, and will

kindly drop us a line, we will so inform our readers.—Ed. G. M.]

CARNATION ALBANI.—"P. McK.," Montreal, Can., writes: "I enclose a bloom of carnation. It is a seedling of last spring. It has been admired here and christened Albani. Please let me know through the columns of the MONTHLY your opinion of it, and if it is new."

[A very large salmon colored flower—a color popular for loose flower work. The tube is rather too short and too thick for the popular idea of a good flower, especially as it seems to burst the calyx very deeply on one side. In brief it is a fair flower, though hardly first-rate.—Ed. G. M.]

DOUBLE NEW LIFE GERANIUM.—We have from Nanz & Neuner a double variety of the well-known striped geranium, "New life." N. & N. seem very fortunate in getting hold of first-class new things. We fancy this will be as popular as their double Bouvardias have been.

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

FRENCH CHESTNUTS.

BY SAMUEL C. MOON, MORRISVILLE, PA.

There are few trees more beautiful or desirable for ornamental planting in parks or large lawns, or about farm yards than the French chestnut. It has been pretty satisfactorily proven by experiments in various parts of the country that the culture of large varieties of chestnuts for the fruit is profitable when good trees can be secured. The French chestnut is the best, it being the most hardy and productive of the large varieties. There is very little, if any difference, between the French and Spanish, except in vigor, the former being more hardy. These terms, as used in nursery catalogues, are synonymous, and if it is certain that the trees are entirely hardy there is no preference as regards these names. The Italian is claimed by some to be the largest variety, but they are not any better flavored, and the trees are too tender to be desirable for general cultivation in this latitude.

Seedling chestnuts, like all other fruit trees, vary considerably in the important characteristics which make them valuable, viz.: hardiness, productiveness, size and quality of fruit; therefore, it is necessary to plant stock which has been grafted from bearing trees of known excellence, the same as would be done in planting apples, pears, cherries, or other kinds of fruit.

Another great advantage arising from grafting is early productiveness, worked trees commencing to bear much earlier than natural stocks.

In the spring of 1876, we grafted a lot of French chestnut seedlings, which were then about three feet high. In the autumn of 1878, two years after grafting, several of the trees had attained a height of eight feet, and were two inches in diameter of trunk, with fine, well-branched heads. Some of them bore fruit that season, the nuts being large, sound and perfect.

Grafted trees will generally come into profitable bearing at about the same age as apple trees, or from eight to ten years after grafting.

The seedlings which are imported from France are generally tender, and suffer more or less injury every severe winter, so that if not killed they are a long time in attaining sufficient size to bear a full crop of fruit, while stock raised from the seed of hardy trees which have been acclimated to this country are much hardier and more desirable.

The characteristics in growth which distinguish the French from the American chestnut are, the darker and heavier foliage, the brighter color of the young wood, and a more compact habit of growth, the true French chestnut generally forming a low, rounded head, similar to a large apple tree or Norway maple.

The quality of the nuts varies very much in different trees. When eaten raw there is a slight bitterness about the skin of nearly all of them, but much more in some than in others; they are not quite as sweet as the small American nuts, but when boiled or roasted, and the skin removed, their taste is very similar to that of the native variety, many persons being unable to distinguish between them.

We think that when all the merits of these chestnuts are better known, they cannot fail to be ap-

preciated, and they will become one of the most popular shade trees.

INFLUENCE OF STOCK ON GRAFT AND OF GRAFT ON STOCK.

BY JEAN SISLEY, MONPLAISIR, LYONS, FRANCE.

Some people dispute this influence; still lately my friend Alphonse Karr has cited an example; that of hybrid perpetual roses flowering better by being grafted on the common China rose, than if grafted on the brier. In my opinion that influence is general, although not always perceptible.

Let those who have doubts make an experiment. Plant two wild briers, like those used for standard roses, near one another; graft one of them with a Tea rose and let the other grow at random. After three or four years they will find that the grafted one has scarcely grown thicker, that the other has nearly doubled in circumference; and perhaps the grafted one has died.

Who does not know that pears are grafted on the quince to obtain pyramidal forms, not vigorously growing, and in consequence early fruiting.

Let those who are not acquainted with this practice graft the same variety of pear on quince stock and on a seedling pear of the same age, and they will soon perceive that the latter is by far the most vigorous.

I have made in the severe winter of 1871 the sad experience. All the pear trees in my garden grafted on quince, were killed by the hard frost, and those on pear stock survived.

Why do Tea roses, and more particularly the more delicate varieties, acquire more vigor when grafted on the seedling brier than on their own roots?

[As we understand the question of "the influence of the stock on the graft," it would not include such as presented by our correspondent. These properly come under the head of nutrition. A strong variety grafted on a weaker growing stock is checked in its luxuriance; and a weak growing kind receives extra nutrition through a stronger stock. The same effect is often produced by applying different manures, different soils, or different situations—or by "ringing" the bark of the growing tree.

As we have understood this question of the influence of the graft on the stock or the stock on the graft, it has rather had reference to a kind of hybridization. In other words, can the character of a tree be so changed by grafting as to produce such marked variations as could not follow from mere laws of nutrition alone? There have been some few observations made which seem to indicate the possibility of some such influence, but we must say that these have been so few that no general law that such is the case can be fairly drawn.—Ed. G. M.]

MANURES.

BY RUSTICUS.

Sir Humphrey Davy writes: "Some inquirers, adopting that sublime generalization of the ancient philosophers, that matter is the same in essence, and that the different substances considered as elements by chemists are merely different arrangements of the indestructible particles, have endeavored to prove that all the varieties of the principles found in plants may be formed from the substances in the atmosphere, and that vegetable life is a process in which bodies that the analytical philosopher is unable to change or to form, are constantly composed and decomposed. But the general result of experiments are very much opposed to the idea of the composition of the earths by plants from any of the elements found in the atmosphere, or in water, and there are various facts contradictory to the idea."

Some contend that the "ammonia of the air is sufficient to supply all the wants of the crops, and have maintained that any other supply of ammonia is unnecessary." Ammonia is one of the most valuable ingredients of manures. A certain class maintains that ammonia determines the value of manure. I think it the most desirable part of manure. It is well known that before nitrogen can become assimilated by plants it must be converted into ammonia. Nitrogen is exceedingly precious. It is the most costly element. Now, from the searching experiment of Dr. Laws, the fact is pretty clearly established that but little nitrogen is derived from the air, but almost entirely from the soil and fertilizers.

The exploded theory that artificial manuring is useless, that earth and atmosphere always contain and supply it sufficiently, must no longer beguile the agriculturist. I desire to consider manures. They are the main pillar of farming. They are a capital that never fails to produce a handsome dividend. Often, to dispense with them to save expense, is really to make expense. Land that has become much worn, if not well manured, becomes to a great degree, dead capital, and to cultivate it is a waste, in the sense that you are not getting out of it the value of labor, culture and

seed. Manure, then, gathers infinite importance. There may come a condition of soil that nothing but manure will restore. Rotation of crops, fallow, trenching and deep plowing cannot fully or adequately bring it back into good "heart" or fine "tilth." These means only serve as a partial renovator. Prof. William Rhind, Mareschal College, Scotland, in his great work, "History of the Vegetable Kingdom," says: "Soils in a state of culture, though consisting originally of the due proportion of ingredients, may yet become exhausted of the principle of fertility by means of too frequent cropping, whether by repetition or rotation of the same, or of different crops. In this case it should be the object of the phytologist, as well as of the practical cultivator, to ascertain by what means fertility is to be restored to an exhausted soil, or communicated to a new one. Even upon the plan of rotation, the soil becomes at length exhausted, and the cultivator obliged to have recourse to other means of restoring its fertility."

Draining and burning the soil are equally unavailable in renewing land. It may be well to mention the benefit accruing from burning. It is the decomposition of the vegetable substances contained in the turf, and subjected to the action of the fire, which dispenses part also of the superfluous moisture, but leaves a residue of ashes favorable to future vegetation. "But it often happens," says Rhind, "that the soil can no longer be ameliorated by any of the foregoing means, and in this case there must be a direct and actual application made to it of such substances as are fitted to restore its fertility. And hence the indispensable necessity of manures, which consist chiefly of animal and vegetable remains, that are buried and finally decomposed in the soil, from which they are afterwards absorbed by the root of the plant in a state of solution." It stands to reason that land cannot forever be drawn upon and not become sterile; that is, if nothing be furnished it to replace what has been extracted. This is exactly the principle involved in manuring. Says Morris Copeland, in "Country Life," "We know that any plant cultivated on an acre of land for many successive years without manure, finally reduces that acre to sterility. It will bear no more of its old crops. The reason for this seems to be that the constituents of which that crop is composed are withdrawn to such an extent that there is not enough left to support new plants; not, enough, I mean, in a form adapted to the plants."

Now, if manures be absolutely necessary, what are they, and which is the best? There are many. First and foremost, the animal manures, fish, bones of animals, lime, gypsum, wood ashes, common salt, soot, peat earth, sea weeds, malt dust, rape cake and linseed cake, green succulent plants, and commercial fertilizers. I would call special attention to bran as a fertilizer. It is of great value. I would urge tillers of the soil to experiment with it on a small scale at first, to test the matter for themselves. The results will convince them. I have said that constant cropping without ever fertilizing, will ultimately render it worthless. Copeland states, "Take the best soil and cultivate it without manure. For many years the crops will be undiminished, but will ultimately decrease. The land is at first in what is called good heart; the balance is large and crops can draw on it to any extent without danger of check; but to ensure a continuance of this fertility, and to exactly carry out nature's laws, we must return to the soil as much of the constituents of the crops as they remove. Unless we restore the elements we take from the soil in crops, we shall ultimately impoverish it."

Which is the best mauure? Sheep dung. In a fresh state it consists of water, 68.71; arotized matter, 23.16; saline matter, 8.13, in 100 parts. The 8.13 parts of saline matter is composed of phosphate of lime, magnesia, silicate of potash, common salt and silex. Says Copeland, "So powerful is this manure, that it is said that 1,000 sheep folded on an acre one day, would manure it sufficiently to feed 1,001 sheep, if their manure could all be saved; so that by this process, land which can the first year feed only 1,000 sheep, may the next year, by their droppings, feed 1,365. Sprengle allows that the manure of 1,400 sheep for one day is equal to manuring highly one acre. In France it is allowed that one sheep manures about ten and a half square feet of land per night—when folded on the land. I dwell particularly on sheep excrement, for I am a great advocate for sheep grazing, for various reasons, not the least, their rich droppings. Horse manure is composed of water, 75.31; geine, or organic matter, 20,57; salts, 4.02, in 100 parts. The geine has carbon, 9.56; hydrogen, 1.26; oxygen, 9.31; nitrogen, 0.54. It is nearly double the geine of cow manure. Cow manure, in 100 parts—Geine, 15.45; salts, 0.95; water, 83.60. Organic matter—Nitrogen, .505; carbon, .234; hydrogen, .824; oxygen, 4.818. 100 parts fresh cow dung afford five-eighths pounds nearly pure ammonia, or about two pounds two ounces carbonate of ammonia.

Experiments show that one cow prepares, daily, 85.57 lbs. dung. "Cow dung, for several reasons—its universality, its sameness of character, its composition—may be taken as the type of all manures, and all may be valued as they approach to or depart from it. A single cow, fed on hay and potatoes, will yield 31.025 lbs. dung. This would have lime enough for 140 bushels of rye, and its straw, could it all be evenly spread and readily taken up, and also more than enough nitrogen." Let me direct thought to the agricultural value of leached ashes (wood). In 100 bushels, Troy weight, analysis gives: Phosphoric acid, 11½ lbs.; silex, 146 lbs.; oxide of iron, 17 lbs.; oxide of manganese, 51 lbs.; magnesia, 110; carbonate of lime, 3.072 lbs.; potash combined with silica, 50 lbs. It is very desirable. Apply manure to surface, and also plow in deep. You thus meet all requirements.

EDITORIAL NOTES.

DEGENERACY IN STRAWBERRIES.—In our country it is pretty clear varieties of strawberries do not last long. We have to continually replace old with new varieties. We have contended that there is no reason in nature why a variety should not endure for an indefinite period. No degeneracy is due to unfavorable conditions which induces a relaxation of vigor, and the degeneracy is propagated with the variety. In England, where the climate is peculiarly favorable to the health of the strawberry plant, old varieties continue in popularity. Keen's seedling and others, near a half century old, are still the popular favorites to-day.

SOIL AND QUALITY IN STRAWBERRIES.—Referring to this important consideration, in an address at New Orleans, Mr. McKay observed that while it is true that berries grown on a sandy loam are often as large and apparently as firm and well colored as on a clay loam, it is equally true that they are deficient in that solidity, strength of color and general make up that the same varieties possess grown on the clay loam. All the facts, so far as we have been able to gather them, point to the general conclusion that, all other things being equal, the strength, beauty and perfection of the berry is diminished in proportion as free sand exists in the soil; not that any of our good land is without sand, but we use the term "free" sand where it readily separates and can be seen in the branches and little gullies.

DETERIORATION OF THE WILSON STRAWBERRY.—At the meeting of the Mississippi Valley Horticultural Association, Mr. Galusha stated that the Wilson plant was not so robust as many other varieties of the strawberry, such as the Crescent, Piper, Cumberland Triumph, Kentucky, and many others of like constitutional vigor. The Wilson, and some other varieties of strawberries, upon the same, or adjoining and similar soil, where fifteen years since vines of Wilson were healthy and productive, are now feeble, make but few plants, and give but one-fourth, at most, the fruit they formerly gave, and this, too, where the best plants are used in planting, the ground enriched with manure, and good care given in the cultivation. Mr. Galusha then cited several instances where large raisers of the Wilson had abandoned that strawberry on account of its great deterioration by time. There were exceptions to this rule, however; the Wilson in some localities in Wisconsin, Western Michigan and Southern Illinois, the plants there being vigorous and healthy. The Wilson strawberry, when allowed to ripen upon the vine became a rich fruit; but the Bidwell, Capt. Jack, the Sucker State and the Piper, when shipped to large distances, arrived in about as good order, and were much superior in taste.

STEWED RASPBERRIES.—A correspondent writes that there is a wonderful difference in the value of raspberries for stewing, and that those who have never tasted stewed raspberries have missed one of the richest epicurean treats that this world affords.

RUSSIAN CURRANTS.—Writing from Russia to the Iowa *Homestead*, Prof. Budd says: "Of currants we find here a new race, with black and red fruit, decidedly sweet. It is labelled in the botanical garden, Ribes alpina. The fruit of one variety seen here is as large as the cherry currant. It is not prized, as the currant is mainly used for sauce and jelly, for which the common form is preferred. Many Americans like sweet fruits, and would think this new race valuable."

THE CHERRY AND LA VERSAILLAISE CURRANTS.—We have always contended that those who have asserted the identity of these two are in error. They are readily distinguished when the true kinds are together. It seems some in the old world have also confused them, but the *Revue Horticole* notes that it is a great mistake to confound the two. The fruit is much longer and regular in the bunch than the cherry. The plant

is more vigorous and more robust, as our contemporary well remarks.

OVERBEARING PEARS.—The recent discussion on the quality of the Kieffer pear raises the question, how many varieties of pear have been pronounced worthless because they have been permitted to overbear, that might have been pronounced delicious if the grower had the knowledge or disposition to thin the crop? And again, many of those which had stood the test of widespread popular experiment, have gained general approval simply because they will not attempt to do too much. Mr. B. O. Curtis, of the Illinois Horticultural Society, says that "many pear trees kill themselves by over-production. I have a notable example in the Beurre d'Anjou of a variety that never overbears and never blights. It annually produces a moderate crop, evenly distributed over the branches, a single fruit on a spur, not in clusters as it is with many other sorts. The fruit is large, of fine appearance and scarcely surpassed in quality."

MELONS NOT AN EXHAUSTIVE CROP.—At a recent meeting of the Massachusetts Horticultural Society, Hon. Marshall P. Wilder said that "he had grown melons on the same land for ten years; the ground has a south aspect. He prepares a compost of manure, soil and guano, which he spreads on the land in addition to manuring in the hills. Surface manuring is very important, as the plants root from every joint. He has no trouble with insects; he gets up in the morning before they do. He has grown nearly all the kinds in the catalogues. The Christiana can be grown by any one who can grow melons at all. The White Japan is the earliest and most delicate. The Casaba is vigorous and reliable. The Bay View resembles it strongly."

THE PRENTISS GRAPE.—We have from time to time expressed the favorable impression this grape has made on the editor, in so far as he could judge from specimens of the fruit before him. We now note that *Vick's Magazine* expresses a doubt whether any white variety of grape will prove as good a market variety as the Prentiss.

THINNING FRUIT.—Though we have so often reminded the pear grower that trees overburdened with fruit give us pears almost unfit to eat, recent discussions show the wisdom of continually repeating this caution. We are again reminded of this by the statement of a correspondent of the *Country Gentleman*, that "to have the best success, most of the pears must have good cultivation and not be allowed to overbear. The Winter Nelis, for example, sometimes has its branches loaded like strings of onions; if thinned, the fruit will be larger and keep better."

PLUMS IN RUSSIA.—Prof. Budd says: "No varieties of the plum are grown except of an Asiatic race, which seems perfectly hardy. The fruit is superior to our best wild plums in solidity of flesh but not in flavor. The normal form seems red, but yellow and black ones are seen here on every street in reality. I think it will prove valuable if not destroyed by the curculio. I say this, as it ripens very early in the season. The fruit of all the varieties is oblong, with a deep and peculiar structure on one side like some peaches. Some of the choice varieties of this race ripen, it is said, later in the season."

PEACHES IN ILLINOIS.—Mr. Parker Earle says: "In the East it is probable that the production of peaches has kept up with the growth of markets, and possibly has got ahead, but in the West the absolute production of peaches is much less than half what it was a dozen or fifteen years ago, while the markets have at least quadrupled in capacity. It is true that Delaware and Maryland peaches are often sent West in large quantities, but rarely in fine condition; and they could not compete at all with choice peaches grown here."

IMPROVED BLACKBERRIES.—Though we have had the luxury of blackberries for a quarter of a century, our improved kinds seem unknown to any extent in Europe. A correspondent of the *Garden* has recently visited America, and thus writes:

"The bramble, or, as usually called, the blackberry. They have no wild brambles more edible than our wild ones, and yet by selection and careful culture they have brought the blackberry to be a fruit in no way to be despised. There are a great many varieties, and some of them have been in cultivation for thirty or forty years, but I must say that I think our wild bramble, which is naturally a most variable plant, would by culture and selection soon produce something as good as any the Americans yet have. It may be noticed that there are some of our wild brambles much sweeter than others, and some much larger than others, and as this seems to belong rather to individual plants than to varieties, I think it only requires selection to give a good start towards British blackberries. These I would expect to produce good crops that would at least pay the trouble of culture on ground that is at present worth nothing. Bramble treatment is very similar to that of the

raspberry, but being a more robust grower it is better to be on poorer soil and to be severely pruned, which keeps it from running too much to wood. I have no doubt that if fruit of good varieties of this could be produced in quantity enough to make it a recognized market fruit it would soon come to command good prices."

We have under culture in America the cut leaved variety of the common English blackberry, and which fruits regularly every year; but we fear the chance of ever improving it to the standard of the American would be small. Better at once introduce the American varieties, unless, which indeed may be likely, the English summer is not warm enough to make the American species grow well.

BARBED WIRE FENCES.—These are known in England as "steel wire hedges."

VEGETABLE GROWING IN THE SOUTH.—It is said that there are upwards of 2,000 acres devoted to vegetable culture around Mobile, and this does not embrace any melon grounds. This space is equal to 4,000 acres North, as two or three crops can easily be grown on the same grounds near Mobile within a year. They begin with cabbage, next Irish potatoes, following with cabbage, sweet potatoes, etc.

Such a cropping, however, would require an enormous outlay for manure. As a general rule the want of manure has been one of the chief difficulties in extensive vegetable gardening in this region. Where the climate is so mild that the cattle run at large all winter, manure will of necessity be scarcer than when fed in the stable yard for half the year.

FRUITS AND VEGETABLES AT CHARLESTON.—Charleston has engaged profitably in truck farming, a pursuit which was virtually unknown in this district before the war. The value of the Charleston fruits and vegetables, shipped last year to Northern markets, was over a million dollars. Charleston, moreover, has created a vast business in the manufacture of commercial fertilizers.

MARKET GARDENING NEAR NEW ORLEANS.—Market gardening is conducted in many parts of the South in the same systematic and profitable manner in which it is often conducted at the North. Near New Orleans, Major Rountree bought a place in 1870, at that time in bad condition, commenced operations on it the following year, and in 1873 set out the first orange trees, which at present are 7,200 in number, 6,000 of which will be in bearing this year. Besides the ordinary varieties, he has 2,500 mandarin trees. And yet, notwithstanding the extent of the place, and the variety of the products, so admirably is everything arranged and conducted that the entire work is effectually done by a force of not more than twenty or twenty-five colored hands.

Major Rountree generally makes 800 to 900 barrels of cucumbers and 6,000 to 8,000 boxes tomatoes annually. He will make about 170,000 heads of cabbage this year, grown in a plot covering forty acres. Besides these staple products, a considerable portion of ground is devoted to the cultivation of strawberries, cauliflowers, peaches, grapes, etc., for family use. There is also an apiary, with an annual production of eight to ten barrels of honey.

Everything is conducted in the most methodical and economical manner, and yet, withal, imbued by the enterprising and liberal spirit of the proprietor. All of the plants are brought forward under glass, the place having nearly two acres of hot beds. The plants are set in the open ground as soon as the weather will permit, and in that way these large crops are handled like clock-work, and go forward in round lots by the car load, all under the brand which has become a standard one in the markets of the North and West, viz: the letter R, surrounded by a circle. So celebrated has this brand become that the Major's regular consignees, in Chicago and other large markets, accept it as a sufficient guarantee of the good quality of the goods shipped.

SCRAPS AND QUERIES.

QUALITY OF THE KIEFFER PEAR.—A correspondent writes that he bought one of the Kieffer pears offered by Mr. Satterthwaite for sale at his stand in the Philadelphia market, paying him twenty-five cents for the specimen. That it had a remarkably taking appearance; but that when he took it home he found to his sorrow that it was not worth taking, except as medicine.

This is quite likely, and yet does not prove that the fruit is not of superior quality when properly grown. Mr. Satterthwaite stated before the recent meeting of the Pennsylvania State Horticultural Association, he had more than a hundred bushels from trees two and three years grafted, each giving over a bushel. If Mr. Satterthwaite had thinned these to half a bushel, the eating qualities would have been improved. But he grows for profit, and has to study how to realize the most from his trees.

If he had thinned half, he would have had to sell for fifty cents each, instead of twenty-five cents, to make the same money. It is doubtful if he could have sold all the pears at fifty cents each, no matter how good they might have been. Mr. Satterthwaite took the right view, but it is folly to take such experiments as the true test of the eating quality of the Kieffer pear.

EARLY BEARING PEAR TREES.—"L. J.," Cincinnati, Ohio, writes: "I have a small garden from which we sell considerable vegetables and small fruits, and which, being left a widow with a young family, has helped to support me pretty well. I have no large fruit trees on the place, but two pear trees, one of which is a Seckel, and the other is just coming into bearing, and, I am told, is the Tyson. They are between twelve and fifteen years old. From what I can judge by the little experience I have had, I think I could make a little on some good late fall pears, and am thinking of setting out say two dozen this fall. I think the best will be better for me than a number of varieties. But the two I have have been so long coming into bearing, I thought to ask your advice. What two kinds would you advise me to take, that are first-rate fall pears, and not so long before they bear?"

[Try Bartlett and Sheldon.—Ed. G. M.]

HIGHLAND BEAUTY APPLE.—We have some specimens before us, on the 9th of April, in good preservation. They confirm the opinion we have given of it heretofore—that it is a pretty looking apple, an excellent keeper, though by no means a first class eating variety.

FORESTRY.

EDITORIAL NOTES.

SPARE THE FORESTS.—The *Michigan Farmer* presents the following excellent bit of common sense in regard to the common newspaper cry of, "Spare the Forests:" "Of what use is a forest if you do not utilize it? It produces nothing, and prevents anything else from being produced. Cut it down and turn it into cash, and in its place grow crops that will feed the people and enrich the grower. If timber is wanted, grow it as you would any other crop, and when it is ready to cut put it in market with as little compunction as you would a crop of wheat. Let us look at this question in a practical way, and do away with such sickly sentimentality?"

FLOODS AND FORESTS.—The great number of marked papers and essays sent us on forestry shows the widespread interest in it. Before us is a Boston paper with a two-column article, suggested by the late floods in the Ohio and Mississippi. It says:

"We have continuous reports from the West of overflows and inundations, destruction of city property and farming lands, loss of life and ruin of the finances of many, all of which is a blight on our prosperity. The reason why has been sought, and the conclusions of many are that the indiscriminate and lawless manner in which our forests are felled from the mountains, hills and valleys is the true cause for these incredible flows of water in such immense quantities and at one time. It is argued, and it seems with reason, that a mountain side, when wooded, prevents the sudden melting of the snows and ice, which cause our freshets; that the dissolution is more regular; whereas, when exposed to the full rays of the sun and to the rains, there can be no doubt that the snows and ice melt with greater rapidity."

All of which is but another illustration of the point we often make, that impractical people can write for an hour about that which five minutes of practical experience would dispel. Everybody except chronic "writers on forestry" knows that the recent floods came from very heavy and warm rains pouring down on a deep deposit of snow, and that a warm rain will melt snow under trees just as rapidly as it will melt it out in the open. The "full rays of the sun" had nothing to do with these Western floods. But there is little chance of the crop of such essayists melting away.

DESTRUCTION OF FORESTS IN MISSISSIPPI.—The town of Wesson, in Mississippi, was struck by a cyclone on the 23d of April, and the pine forests in the vicinity utterly uprooted, as well as the houses destroyed. Wesson is to be sympathized with. It was one of the first places in the South

which after the war went into the development of home industry. Here they grew their own cotton, and manufactured it on the spot, finally producing an article as cheaply and as good as that manufactured in any Northern State. A visit to these mills, then in their infancy, some years ago, is among the pleasant recollections in our editorial experience.

A GREAT PLANTER OF TREES.—The Duke of Athole is one of the most extensive tree-planters in the world. There are already vast woods and plantations in Athole and Dunkeld, and as, of course, they exist for use as well as ornament, large numbers of trees have to be planted annually to maintain the woods. Indeed, every year the Duke plants from 600,000 to a million trees. During this season a plantation covering 2,000 acres has been completed. It may be remembered that the Duke of Athole's plantations were thinned of 80,000 trees by the gale which destroyed the Tay Bridge. When the planter Duke began operations on a large scale in 1774, the Dunkeld Hills were almost bare. During his life the Duke, who may be described as a true benefactor to his country, planted 27,000,000 trees, covering 15,000 acres.

TREE-PLANTING IN KANSAS.—A Crawford county correspondent of the *Tribune* says: "In this neighborhood there are two plantations which seem to prove that under intelligent management success is reasonably certain. The plantations are each of about five hundred acres, and are noteworthy for many reasons. One of them is the property of Mr. H. H. Hunniwell, a Boston capitalist. The trees have been planted as an investment, and although the forest cannot prove immediately remunerative, it bids fair to yield enormous profits in the future. The other enterprise is conducted on the same plan by the Fort Scott and Gulf Railroad Company, primarily to furnish ties and timber for its own use. The millions of sleepers which are needed every year by the roads crossing the treeless area renders it absolutely necessary to make some such provision for the future. The planting of trees on a large scale by railroad companies, especially by roads which have ample land grants, is so natural and proper that operations of this sort have frequently been undertaken. But owing to carelessness or ignorance in selecting the ground, or in choosing varieties, or to improper methods of planting and management, most of the earlier ventures resulted in loss, discouragement and final abandonment. The success of these experiments in Eastern Kansas ought to stimulate other companies and capitalists to new efforts, and landowners of small means by adopting similar methods can soon double the value of their own property, while at the same time they can add materially to the comfort and prosperity of their neighbors. In both these cases contracts were made with Robert Douglas & Sons, of Waukegan, Ill. A block of 100,000 seedlings planted in the spring of 1879 on rich soil in the Fort Scott forest already ranges from ten to fifteen ft. in height, while the individual trees vary in circumference from eight to eleven inches. The catalpas in this plantation weathered triumphantly the parching drouth of 1881."

RESPONSIBILITY OF RAILROAD COMPANIES FOR BURNING FORESTS.—At Philadelphia, in the United States Circuit Court, in the case of Robert D. Coxe and wife against the West Jersey Railroad Company, to recover the value of trees burned on the lines of the road, caused by sparks from locomotives, the jury, on April 13, rendered a verdict for the plaintiff for $586.71.

BOX FORESTS.—An exchange says: "The best boxwood is brought from the shores of the Black Sea in Turkey, inferior varieties being obtained in Persia, in Spain and Portugal, and in the Balearic Isles. It is said that in 1815 box-trees to the value of £10,000 ($50,000) were cut down at Box Hill, in Surrey, England; but the tree is of so very slow growth that it is seldom raised in that country except for ornament." This date, however, must be an error, for the editor of the GARDENERS' MONTHLY, when on a long botanical tour, made his bed of the branches and slept soundly all night under the trees in this Box forest in 1845. The weird appearance of this forest will ever be remembered. The trees ranged from the thickness of one's wrist to that of the leg, and were from ten to twenty feet high. There was not a blade of grass, but only some shade-loving orchids to be seen, so dense was the shade. Even at midday the close evergreen foliage left only twilight beneath. The poets sometimes sing of the "deep cathedral shade of the forest," but the bare column-like stems of these box-trees with the brown, flowerless ground, illustrated the poet's fancy better than we remember ever seeing anywhere since.

PINE LANDS IN NORTH CAROLINA.—It will not be long before it will be found profitable to plant trees in even the old Pine Tree State. The successful manufacture in Philadelphia of lubricating oil from rosin, has given a new value to the Caro-

lina pine forest. The amount of annual product of rosin appears to be decreasing with the increased demand for it. Already the newspapers of that State are demanding "legislation." But at the rate destruction is advancing it will soon pay to plant without much encouragement from the law.

GROWTH OF CATALPA SPECIOSA.—Mr. Suel Foster gives the following figures of a tree planted by Mr. A. Bryant, at Princeton, Ill., in 1840: "Girth two feet from the ground, nine and a half feet; girth five feet from the ground, eight feet; height of tree, sixty-five feet; spread of branches, eighteen to twenty-one feet from the trunk on all sides." This is adding nearly half an inch of growth a year, and is a good record.

TIMBER ON THE PRAIRIES.—Once on a time it was fashionable to believe that there was something in the climate or the soil of the prairies which accounted for the absence of arborescent growth. No one would plant trees because every one knew they would not grow.

The whole United States is indebted to those early pioneers who proved the falsity of this idea. The time will come when these men will be sought for, that posterity may do them honor. In an address at Montreal, Dr. Warder, referring to these benefactors, pays a handsome compliment to Jesse W. Fell, of Bloomington. There is a large plantation of trees from which the village of Larchwood takes its name, planted through the efforts of Mr. Fell, who in a letter to Dr. Warder says: "On sixty-one quarter-sections of land we had planted 323 acres of forest trees, that are now in various stages of development, from those newly planted to trees nearly forty feet high. Further, we had planted on the survey lines, within a more limited range, 53.68-100 miles of willow-hedging, and one mile of Osage orange. The latter utterly died out at the end of the second year."

KANSAS FORESTS.—It is said by newspaper reports, which, however, are not always accurate, that over 90,000 acres of forest has been planted in Kansas. Whether strictly correct or not, there has been a large extent planted.

SCRAPS AND QUERIES.

RUSSIAN MULBERRY.—An Arlington, Kansas, correspondent says: "Are you sufficiently acquainted with the so-called Russian mulberry which was introduced into the United States a few years ago by the German Russian Mennonites, to give me its botanical name and history? The Mennonites of this county, who came here from Russia, about sixty miles north of the Azof sea, brought seeds with them and planted them in the springs of 1876 and 1877, in this and adjoining counties. I got some of their first seedlings and some the next year, and now have many thousands of them growing. I find marked differences in the trees and leaves; also in the size and color of the fruit, some being white, some black and some a pale red or dirty pink color. I have thought that, perhaps the black fruited is of the Morus nigra or Morus tartarica species, and the white of the Morus alba. But there seems to be a great difference between these Russian kinds and the white and black kinds which we had in the United States from other sources. The Russian seems more thrifty, hardy and vigorous, and is much more productive, so far as I have observed."

[The silk worm mulberry is Morus alba. Plants from this come with leaves, fruit, and habits varying just as anything else does. We have blackberries with white, reddish and black fruit; white and yellow peaches; white, red and black grapes; just as we have black, white and rosy Morus alba. This is translated "white mulberry," and it is still white mulberry, though it has black fruit. The Morus nigra of Europe might be translated "black mulberry," but the black fruited white mulberry is another thing.

The white or silkworm mulberry has a wide range in a wild condition, extending through Asia and Northwest Europe. In different localities they vary a little, but they are all of the Morus alba or white mulberry species. There is Morus japonica, the Japan mulberry; Morus tartarica, the Russian mulberry; Morus Italica and M. morettiana, Italian mulberries; Morus sinensis, the Chinese mulberry, Morus Romana, the Roman mulberry, and many others, all varying much as one grape or one apple differs from another variety of apple; but all Morus alba, and nothing more.

Just how far one of these varieties may be better than others for silk worm feeding is yet an open question. If we propagate the varieties from seed the special variety will soon be lost, for it is the tendency of all such things to vary. We may decide a Baldwin apple to be a variety just suited to our wants; but if we raise it from seeds it will soon be lost. How the mulberry variety varies from seeds our correspondent's letter shows.

The only way surely to keep these varieties is by cuttings, grafts or layers, as we have to do with varieties of fruits.

But here is the trouble. It is well known that if a large propagator gets some disease among his stock it is disseminated far and wide, till the whole race becomes contaminated. If the plant is vitiated the insects which feed on them suffer. This was the real reason for the failure of the mulberry experiment of some fifty years ago. Then the kind of Morus alba used was the Multicaulis variety. It appealed so much to the raisers of the silk worm by its enormous leaves that there seemed to be no question about its superiority. It was raised from cuttings. A weakened vital power was in this way spread. On its introduction it was pronounced as "hardy as a rock," and it was. At length it became, as we read in the reports of those times, "too tender for the vicinity of Philadelphia." But this made no difference, for the insects feeding on diseased leaves fell sick, and with this great disaster to Dr. Philip Physick's cocoonery, the "bottom fell out of the multicaulis speculation," as the old records say. With all this experience to profit by, if we were to engage in the silk worm business we should stick to seedlings of the pure Morus alba, and worry very little about improved varieties.—Ed. G. M.]

Natural History and Science.

COMMUNICATIONS.

GRAFTING THE GRAPEVINE ON THE L' EGLANTIER (DOG ROSE).

TRANSLATED FOR THE GARDENERS' MONTHLY BY MISS S. D. M.

We read in the *Journal du Loiret* of Dec. 13, 1882, as follows:

"We described in our number for November 10th last, an important discovery made by Mons. Etienne Savary, gardener at Muids, namely, that the Dog Rose was an excellent stock for the grapevine, so fatally compromised by its redoubtable enemy, the Phylloxera.

"Subsequently, Mons. Eugéne Delaire, General Secretary of the Sociètè d' horticulture d' Orlèans, addressed us a note wherein he remarked that the same results could be obtained with the blackberry, since this plant is, like the dog rose, of the family of Rosacæ.

"To-day the energetic practician of Muids addressed us the following interesting letter:

"MUIDS, December 11, 1882.

"*Mr. Editor*—I would have answered sooner the note of the Hon. Mons. Delaire relative to the freaks concerning the grafting of the grapevine on the dog rose, but I wished, first of all, to ascertain how many people would appreciate my discovery. Many have written to me on the subject, most of them believing my method rational, two only doubting it, but I hope to convert them at once. I was unaware that any one had grafted the grapevine on the blackberry, which belongs, like the dog rose, to the family of Rosacæ, so well observed by Mons. Delaire. I do not believe, however, that the blackberry roots would be as good as the dog rose for stocks, and for the following reason:

"The pith of the blackberry, occupying about two-thirds of the stock, will render it difficult, notwithstanding all the precautions taken to introduce the graft into the opening of the stock, so that the liber would accurately adjust itself. Moreover, if one wishes to lightly bend the head of the graft on the axis of the stock, the liber is not likely to touch at all, and the success of the graft will be in danger.

"The dog rose does not offer this inconvenience; its pith and that of the grapevine occupy nearly the same space. Therefore, on one hundred grafted vines, one is certain that if the stocks are vigorous, all will take. The first idea of grafting the grapevine on the dog rose came to me through the analogy of their barks. My first grafts were not made on the dog rose, but on the "ferox" rose, a rosebush known by the English under the name of 'Hedge Hog' (Rosier Harrisoni), introduced in our gardens at the commencement of this century. I grafted the grapevine on three of these at

the end of February, 1873. In July, 1875, my vines were more than three meters in length. I am unaware whether they are still in the park at Cercay or not. Since then, I have always grafted on the dog rose (Rosa canina), and have always been successful. At present I possess twenty-five plants of dog rose, grafted only six weeks ago, with different varieties of grapevines. I force them under frames. The rosy tint of the grape vine leaves can already be detected pushing from the bud.

"This is my way of proceeding: The dog rose must be grafted on about ten centimeters below the earth. It is sufficient if the graft has two or three eyes. A very short graft must be chosen, that is to say, the eyes very close to each other; tie the stock well with wool or cotton, and apply the wax to it. In grafting let the ground be well watched, because the grapevine root would give a chance to Phylloxera. It is necessary to look ahead with an enemy with which one must combat.

"I have been asked why, since 1873, I have taken no one into the secret of this discovery. On the contrary, I have done so, but sad to say, some have not deigned to answer me; others, like Mons. Pasteur, answered that they were not qualified to undertake work relating to the Phylloxera.

"Rebuffed and discouraged, I decided to do nothing more towards propagating or diffusing what I knew to be of so much value towards renovating our vineyards, when I received your invitation to address the large circle of your estimable journal.

"To resume. Can one, with the dog rose (Rosa canina) as the stock, establish a vineyard? I believe it. With the blackberry I have doubts, because it would not give all the conditions of longevity required for long cultivation.

"Virgil was assuredly a great poet, but I do not see too much the relations existing between the immortal author of the 'Eneid' and the graft on the dog rose. Let us, therefore, leave to the antipodes the discussion whether the grape can be grafted on the cucumber, and employ ourselves seriously to the common enemy, the Phylloxera.

"Respectfully, etc.,

"ETIENNE SAVARY."

Under the title of "Pretended Grafting of the Grapevine on the Blackberry," the journal *Provence Agricole et Horticole* published the following reflections:

"Much noise has recently been made with the pretended grafting of the grapevine on the blackberry, described by the Ardéche to the minister by an inspector general of agriculture. Proceeding to verify the fact, there was found no mystery. The Chasselas grape graft sent out roots into the ground like a simple cutting, but there was no union at all with the blackberry. This specimen has been sent to the School of Agriculture of Montpelier, and Mons. Foex acknowledged that the graft did not take, and that the grapevine was absolved, living with its own roots without any trace of aid from the blackberry root.

"The laws of grafting are, moreover, well known. They are exact, and established through numerous experiences, and these laws of consanguinity are not contradicted by any facts. They have been largely developed, with proofs for their support by Mons. Ch. Baltet, in his work on 'The Art of Grafting.'

"It is readily to be seen, in the chapter on the vine, that the Vitis, Ampelopsis, and Cissus of the family of Ampelidæs, are the only genera which can be united to the grapevine by grafting."

[Our American papers are noting with a good deal of wonderment the so-called great discovery, "by a distinguished Frenchman," of the successful grafting of the grapevine on the dog rose. We have thought it would serve a good purpose to give our readers the fullest account we have seen of it. It will be observed that, like the grafting of the apple on the persimmon, which created some attention in this country some years ago, it is a case where the "distinguished Frenchman" has deceived himself.—Ed. G. M.]

HYBRIDIZING ARACEOUS PLANTS.

BY CHARLES CRUCKNELL, ST. LOUIS, MO.

In the article published in the December number, allusion was made incidentally to the facility with which Caladiums can be successfully crossed. I now present some additional facts on the subject in connection with a class of plants known to gardeners by the generic name of Diffenbachia, but which are also classed by some botanists as a species of Caladium.

I was fortunate in bringing these two classes of plants into bloom at the same time; therefore you will see there was every reason for believing the result would terminate successfully. I used pollen of Caladiums bicolor, poecile, Houlletii, Neumanii and six other kinds, on flowers of Dieffenbachias, picta, Bauseia and Baraquiniana.

One would naturally suppose that if these plants are closely allied species of the same genus, the fact of hybridizing them would be a simple matter,

coincident with the skill of the operator and the means of performance. But I find that Caladium pollen has not the least effect on the flowers of Dieffenbachia; that, after having experimented for two seasons on at least two dozen flowers, I could not detect the faintest trace of fertility.

The experiment is another of the series mentioned above. It extended over the same period of time, was carried on simultaneously, and under the same conditions. With the same pollen I successfully crossed, reciprocally, the Caladiums without a single failure; but in attempting to cross the Dieffenbachias with Caladium pollen the result has ended in total failure. On the same plants where this failure occurred I successfully crossed, reciprocally, the Dieffenbachias. But to this subject I shall return in a future number, as I have collected a mass of facts which I cannot utilize at present.

One puzzling incident in connection with this matter I may mention here, as affording a strong contrast to the effect, or rather the non-effect, of the Caladium pollen. I dusted one of the flowers of Dieffenbachia picta with pollen taken from Anthurium crystallinum, which happened to come in bloom at the time. The effect of this was curious; in less than three hours the parts of the flower so dusted turned black, and in the course of three or four days shrivelled and dried up. Was this a sign of incipient fertilization? The flowers of Dieffenbachia usually remain fresh and plump for two or three weeks after being prepared for hybridizing.

THE MOTION OF ROOTS.

BY PROF. W. J. BEAL.

It has long been known that many parts of plants possessed the power of spontaneous motion to a greater or less extent. The late Charles Darwin made some very interesting experiments on this subject. During the past two years I have also made a great many experiments on this subject.

Roots, stems, and leaves bend to all points of the compass successively with a sort of rolling motion, which Darwin calls circumnutation—a bowing around. Roots grown in damp air in the dark will often make a complete coil, and sometimes two or three of them. If a piece of gummed paper be placed on one side of the root tip it becomes unusually excited and begins to coil away from the paper, sometimes tying itself into a knot, and often succeeds in rubbing off the paper.

The root generally turns downwards, no matter in what direction it first protrudes from the seed. This is not always true, however, in all of the details. In sprouting 400 or more kernels of Indian corn in damp air, I found the direction taken by the root to vary.

During the past summer I tested some 700 kernels of Indian corn in loose soil; some in the cellar, some in the garden. In damp air roots frequently came to the surface of the soil, where they apparently grew just as well as they grew below the surface. In the garden, exposed to the sun, it is not unusual for roots of corn and beans to come to the surface and perish.

I planted some Lima beans with the eye edge uppermost. Many of them came up after a fashion, but they were a good deal confused. They bent around in various directions, and were very interesting to study.

In the garden nine out of twenty-five, over one-third, of the Lima beans planted with the eye uppermost, sent the radical with all the roots out of the ground, when the whole bean perished.

Darwin made a large number of experiments on a great variety of seedling plants, including some trees, and all, without exception, showed motion of the roots, stems and leaves. He placed a young root under a compound microscope, where he could see it move. He sprouted some beans and placed the tips of the roots against a smoked glass to see what kind of tracks they would make. The tips, in their downward course, had alternately pressed with greater or less force on the plates, and had sometimes nearly left them.

As soon as the tip of the radicle protrudes from the seed-coats, it begins to circumnutate, and the whole growing part continues to do so, probably as long as growth continues. When the earth closely surrounds the roots they may, perhaps, be quite prevented from circumnutating. The tendency to circumnutate must aid in finding the places of least resistance in the soil. Geotropism does not give a root force sufficient to penetrate the ground, but merely tells it which course to pursue. The strength of the radicle of a bean is not enough to indentate the thinnest tin foil when placed horizontally with the radicle thrust perpendicularly downwards. The radicle in such cases turns to one side and glides over the tin-foil without making any impression. The growing part does not act like a nail driven into a board, but more like a wedge of wood driven slowly into a crevice.

[This is part of an address before the Michigan State Horticultural Society in December last.—Ed. G. M.]

EDITORIAL NOTES.

HYBRIDS.—Just what is a species no one can answer. Botanists have some idea what they mean by the term, but no one can define it to another's satisfaction. Neither genus nor species seem to have any place in nature. There seems to have been a provision for continual variation, and for continual destruction. New forms are born, old forms decay. When the older forms

Cypripedium albo-purpureum.

die, there is a gap in the progeny, and the extremes seem unlike each other. The measure of this unlikeness gives us the idea of the genus or species. The greatest measure of unlikeness forms the genus, the less the species; still less, the variety or race, and the lowest measure of difference distinguishes the individual. This is about all there is in it. There is no exact line between either, still the degrees exist. There are genera, species and varieties, though people may not agree as to where any one begins or ends.

In former times tests were applied to define the differences. Thus, it was assumed that no "distinct" genera or species could hybridize. Although it was found some could, it was then assumed they would be "mules," or unproductive. But now this position has to be abandoned; for though it is still true that many closely allied genera or species will not cross, others, even more distantly related, will, and not only this, but the progeny are often more fertile than the original parents. Tests of species, like tests for witchcraft, are of no value now. The beautiful lady's slipper here illustrated is a good illustration of fertility in a hybrid. Some years ago the foreman of Messrs. Veitch raised a hybrid between two distinct species, which was named Cypripedium Dominii. Pollen was taken from this hybrid and used on another species, C. Schlimii, and this is the product. It is a hybrid in the second generation, and still productive. It has departed so widely from the original parent that, if found in nature, no botanist would hesitate to regard it as a good species.

And there is no reason why they should not occur in nature. These plants are often unable to use their own pollen. Generally it has to be brought from other flowers. Sometimes it may be brought from a distinct form or species; and if the seeds following such pollinization get a chance to grow, and the plants again to make seed and spread, just such a new "species" must come as would be by such an operation as here noted by Veitch.

Aside from this bit of illustrative natural history, the plant has charms for flower lovers. We cannot do better under this head than quote what the introducers tell us about it:

"The flower is even a good deal larger than that of the lovely C. Sedeni. It is whitish with purplish (according to English ideas of color, pinkish) on the borders of the lip with many spots of the same color under it. The spots on the inflexed lateral lobes which nearly cover the mouth of the sack, are darker and make a nice impression, since these lobes are ivory-white. The sepals have a slight purplish (pinkish) tinge on their borders. The petals are totally purplish (pinkish), and twisted, hanging down and exceeding much the length of the lip. The staminode is light purplish (pinkish), and adorned on each side with many bristles."

GLUCOSE.—The immense use of corn in glucose manufacture is exciting some interest in the corn markets of Europe. A London daily paper says: "The exportation of maize from the United States will receive a severe check now that a commencement has been made with the manufacture of glucose sugar; for, unless many more acres of Indian corn are cultivated, there will be little maize to spare. A factory is nearly completed in Chicago which will consume about twelve thousand bushels of maize daily, and produce about 30,000 tons of sugar yearly. Maple sugar and sorghum are unequal to the demand, but besides mere sugar there is the manufacture of alcohol, a liquid which enters into so many of the arts of the present day, and which in the United States can be produced as cheaply from maize as from any other starch-containing substance. In the far West maize has been a 'drug' for years, so much so that it was actually cheaper to burn it for fuel than to buy wood or coal; but as the Chicago factory is only the forerunner of others, there is smaller chance of cheap maize coming to this country."

A NEW FUNGUS ON THE PEA.—In a recent address Mr. Wm. Saunders, of London, Ontario, says: "Examples of what appears to be a new disease on the pea have lately been brought to my notice from several localities, under the impression that it was caused by an insect. The disease manifests itself in a series of white fleshy swellings at short intervals along the fibrous roots, varying in size from one-sixteenth of an inch to one-eighth of an inch or more in diameter, irregular in form, and of a solid fleshy structure. Microscopical examination has convinced me that it is a fungus growth in the production of which insects play no part. It appears to have the effect of stunting the growth of the plants and lessening the crop.

A MOVING MOUNTAIN.—The Government engineers engaged upon the ship-canal around the rapids where the Columbia river cuts through the Cascade Mountains, and the engineers of the Oregon Railway and Navigation Company, whose railroad runs beside the Government Canal, have discovered that a point of the mountains, of tremendous height and three miles in extent, is mov-

ing down an incline into the river. The fact of a moving mountain is strange, but not incomprehensible. It seems, says an intelligent correspondent of the New York *Times*, that the great river and the ravines that point to it have cut their way down through a superincumbent mass of basalt into a substratum of sandstone. This sandstone, we will suppose, presents a smooth surface, with an incline towards the river; the river cuts under the basalt into the sandstone, and the natural effect is for the superincumbent basalt, acting like a similar formation of ice in a glacier, to slide down hill. It furnishes an illustration of the manner in which some of the more remarkable changes in the earth's surface have been produced, and will doubtless lead to further scientific investigation.

POISONED BY LIMA BEAN ROOTS.—The family of F. L. Kellogg, at Goleta, Santa Clara county, were dangerously poisoned a short time since by eating the roots of Lima beans, which they happened to discover were very palatable.—*Pacific Rural Press.*

SCRAPS AND QUERIES.

HARDINESS OF EVERGREENS.—Mr. Charles E. Parnell, of Queen's, Long Island, says:

"In this vicinity March proved very severe on the more tender evergreens. Euonymus japonicus and all its varieties are killed to the ground, and so are all hemlock spruce that were removed or transplanted last season. Irish yews, juniper, American and Siberian arborvitæs are severely injured, and many are dead."

The question of what influences the hardiness of plants becomes more intricate every year. It has become settled that it is not frost merely, but something else in conjunction therewith. Here in Germantown some hemlocks have badly suffered, and so has box edgings, small arborvitæs and some other things which usually stand a very low temperature, and yet at no time was the thermometer at zero. On the other hand, plants like the Euonymus japonicas and Mahonia aquifolia, which commonly suffer severely, have not lost a leaf, and are greener and fresher than we have ever known them. Libocedrus decurrens, which we have seen killed when growing near Thuja gigantea, and totally destroyed, while the latter has been unhurt, has the case reversed this season. The Libocedrus remains as green as grass, while it is the Thuja which is browned. It is frost with wind, frost with sun, frost with drying atmosphere, or frost on weak or frost on strong plants—or some other combination suiting some plants, which succeed, or not suiting some, which succumb; but just what, in each case, it seems very difficult to say. The only general result which is clear is, that no result as to what or what is not hardy can be given as a rule. Because a plant once dies is no reason why we should not attempt it again.

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

IN MEMORIAM.

BY PATRICK BARRY.

HENRY E. HOOKER, of Rochester, N. Y., died on the 12th of April last, at the age of fifty-eight years. His health had been failing for more than a year past, but hopes of his recovery were entertained until a short time before his death. He was born in Rochester, and lived there all his life. His father, the late HORACE HOOKER, was one of the pioneers of this section, and was one of the leading business men of his day. He was among the first to plant a good collection of fruits, and his sons grew up with a taste for fruit culture which gradually attracted them to the nursery business.

Of Henry's two surviving brothers, one, HORACE B. HOOKER, is engaged in the nursery business, and the other, CHARLES M. HOOKER, has one of the finest fruit farms in Western New York, almost within the limits of the city of Rochester.

HENRY E. HOOKER has been known as one of the leading nurserymen of the United States for more than thirty years, and no man in the trade enjoyed in a higher degree the confidence and

respect of all who had dealings with him, or who were in any way brought into his presence. He was a skillful and careful cultivator; whatever he did was well done. Of late years he made a sort of specialty of the Brighton grape, which he introduced, and of roses, and I have often had occasion to admire his remarkably skillful and successful management of these. He was also a man of excellent taste, of which his home and grounds gave ample evidence.

An avenue running through his grounds, planted with Chinese magnolias and Cembran pine, placed alternately, is among the finest objects of the kind I know of. Another, planted with weeping birch, is also very fine, and both are original and unique. Mr. Hooker was not a routine man, but a thinker. His death is justly regarded as a great loss to the nursery trade and to the community at large. He was in the prime of life and in a position to make his usefulness more widely felt than ever. He was one of the founders of the Western New York Horticultural Society, for some time its President, and always one of its most intelligent and staunchest supporters. That excellent society owes much to HENRY E. HOOKER, and his death will be sincerely mourned by all its members.

In his social and domestic life Mr. Hooker was one of the best of men. He leaves a wife and four daughters, who have in their bereavement, in an especial manner, the sincere sympathy of the nurserymen and horticulturists, not only of this country but of Europe.

EDITORIAL NOTES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

THE FORCE OF HABIT.—Scientific men tell us that in nature results continue long after the causes which brought them about cease to exist. Edward Munger, in speaking of the time when he was a boy, says it was the custom of school children as you pass a school-house to make a bow, but in these latter days, as you pass a schoolhouse, you must keep your eye peeled, or you will get a brickbat at the side of your head. He still bows his head, but the devotional feeling is wholly replaced by others as wide as the poles asunder.

THE TALLEST NURSERYMAN IN THE UNITED STATES is said to be Daniel Conger, of Walcott, N. Y., who stands 6 feet 6 inches. We remember that when, in a critical moment during the civil war, he was asked as an influential public speaker and a leading public man in his community, o go and make a speech to favor enlistments; he went, and from the platform simply said, "I am going to enlist as a private soldier; who will go with me?" No wonder the company was immediately filled, when they had such a bulwark as this to shelter them, and still less wonder when, during the war, he hobbled into our office, from a neighboring hospital, with a bullet through him. Men of this size should have two pensions, as surely their chances of being struck were doubled.

ORIGIN OF THE PURPLE BIRCH.—The *Journal of Horticulture* says this pretty plant was raised in America. This we take to be a slip of the pen for "France." The plants in America originally came from France, and, indeed, the *Journal* says in the same paragraph: "It was obtained by chance by an old hand of the firm of Transon Brothers, named Dubois, from a sowing of the ordinary birch. He very soon observed the unaccustomed appearance of the plant, and after having raised it he took grafts therefrom, and placed them on young stocks of the common variety, and afterwards established them in pots.

ORIGIN OF THE MANETTI ROSE.—The origin of this famous rose is obscure. In a letter to the *Revue Horticole* M. Bertin, Sr., says he sowed some seeds of unknown Bourbon roses in 1832. Among plants from these he found one very vigorous one. He gave plants to many leading horticulturists, such as Servi, and Bertin, the latter of whom called it Manetti.

To us this does not seem quite clear, for there is nothing whatever of the Bourbon family of roses in the Manetti. It is so near in all its characters to the American Rosa lucida, in all except its extremely strong growth, that one may suspect more relationship to it than to the Bourbon race. No explanation is given of the name, which appears to be Italian. M. Carriere regards it as of Italian origin, and proposes to rank it as a species. He calls it Rosa Bertini.

CATS IN A BOMBARDED CITY.—A correspondent of the Salt Lake *Contributor* thus describes the

suffering of the cats in the bombardment of Alexandria:

"But one feature of the scene (so it seemed to me) that ought to have struck every man in describing the bombarded city of Alexandria, was the immense number of bombarded and starving cats. I had read description after description of the ruined city, but none of them ever said a word about the cats. The writers told me how shells had blown houses to pieces, described all kinds of horrors, and satiated me with catastrophe and skeletons, but no one said a word about cats. Now, it was perfectly impossible to go into Alexandria after the bombardment and then to sit down and write about it, or stand up and talk about it, and not mention the cats. In fact, the whole place was cats! I never saw such 'felisity' in my life. If you turned the corner you would find a hundred —I am talking liberally, of course—one hundred cats sitting on the ruins of a single house. Go a little farther and you would see two hundred. On the remains of what had been the bank of London, it was stated in a telegram that the writer counted three hundred and seventeen cats! New arrivals were moved with pity for the poor animals, but the result of sympathy was always disastrous. Your pity was ruined and destroyed by the immediate rush of paupers. If you produced a mutton chop for one cat, there were three hundred cats waiting next time for three hundred mutton chops. That made charity look rather a serious matter. After the second day the people, instead of taking mutton chops to the cats, would take revolvers and shoot them."

THE ORIGIN OF CULTIVATED PLANTS.—A work on this subject from the pen of M. de Candolle has recently appeared. It treats of 247 species. The author has utilized evidence from Swiss lake dwellings, from ancient Egyptian monuments, and from Chinese works,—better interpreted by Dr. Bretschneider than by his predecessors. He has examined many herbaria, consulted travelers, &c. Of all the 247 species, except three, he has been able to say whether they come from the old or the new world, and to specify with certainty of high probability the country of their origin. The exceptions are two species of the genus Cucurbita and the ordinary kidney bean (Phaseolus vulgaris). There are many species, however, that have not yet been certainly found in a wild state. Where the country of origin has been little visited by botanists this is not surprising; but the case is sometimes otherwise. Certain species very long cultivated seem to be in course of extinction or extinct; they have not been found wild or have been met with only once, perhaps, in a single locality in their native region, though the latter has been well explored. Probably, too, their ancient home has been more or less of wide extent, considering the extension of their cultivation among people that had little connection with each other. M. de Candolle counts 44 species of the old world which appear to have been cultivated more than 4,000 years, and 5 of the new, probably cultivated as long. Of these 49, six or seven seem to be extinct or in course of extinction. Maize has never been found in the wild state. The bean and tobacco (Nicotiana tabacum) have been found only once; the chick pea, the lentil (Ervum lens and Ervum ervillia), and wheat have only been found very rarely and under conditions doubtful as to the spontaneous quality. Most of these species present the character of seeds filled with starch, without any protection against rodents and insects, who seek them eagerly; and it is not wonderful that they should perish in the struggle for existence. With tobacco (which has been found with certainty in the wild state only at one point of the Republic of Ecuador by M. Andre) the case is different. Since the natives smoked or chewed tobacco from Peru to the United States, it is probable that the habitat of the plant was once much wider.—*Gardeners' Magazine.*

ANNUAL REPORT OF THE N. J. STATE GEOLOGIST, 1882.—From Prof. Cook, State Geologist, New Brunswick, N. J. This volume is profusely illustrated by sketches of some of the most striking features in the geology of New Jersey—chiefly in connection with the sandstone formations.

WORCESTER COUNTY (MASS.) HORTICULTURAL SOCIETY—TRANSACTIONS FOR 1883.—From Ed. W. Lincoln, Secretary. It is always a pleasure to receive this annual volume. Like that of the Massachusetts Horticultural Society, it represents the doings of a class of intelligent horticulturists, who do much to maintain the dignity of gardening in our country.

THE SCIENTIFIC ANGLER.—By the late David Foster. Edited by W. C. Harris. New York: Orange Judd Company, 1883.

Foster was the most celebrated of English fishers, and this work was originally the compilation of his sons. Mr. Harris has added copious notes for American readers, thus giving this excellent work a new value in this country.

BACTERIA.—By T. J. Burrill, Ph. D., Springfield, Illinois, 1882. This is a monograph reprinted from the report of the Illinois Industrial University, and to those who have compound microscopes will be found especially interesting. The class of organisms to which it relates have become famous since

naturalists have ventured to grapple with the great problem of the origin of life. Prof. Burrill says that mankind could not continue to exist; could never have existed, but for these minute creatures, and on the other hand many of our diseases would not be but for them.

REPORTS ON EXPERIMENTS, CHIEFLY WITH KEROSENE, ON THE ORANGE AND COTTON PLANT INSECTS.—By C. V. Riley. Published by the Department of Agriculture.

Kerosene, or coal oil, swims on the top of water, and hence cannot be well used with a syringe as an insecticide, unless the operator is skilled in drawing the water and oil in together while using it, as some few can. Some years ago we noted that by using chalk or other substances there would be sufficient mixing to form a satisfactory emulsion which could be used to better advantage; but on the well-known slowness of any good idea to make way, little use seems to have been made of this hint. This work of Prof. Riley is founded on the same idea. Many different methods of preparing kerosene are given here. One, for instance, describes six pounds of the "coontie," or Zamia root, washed, grated, and boiled for an hour in three gallons of water, strained, and while hot mixed with four ounces of sal-soda. This emulsifies one gallon of kerosene. This solution is added to twenty-four gallons of water. Milk and other things are used for making an emulsion.

Though evidently very successful as applied to the insects specified, it must be borne in mind that it is not a universal panacea. The writer has seen some applied to the black aphis on cherry trees, without any beneficial results.

TRUCK FARMING IN THE SOUTH.—By Dr. A. Ormler. New York: Orange Judd Company. 1883.

"Truck-farming" is a word not found in Worcester or Webster, nor in any authorized version. We had supposed it was a slang term, confined to Philadelphia; and are rather sorry to find it has spread so far as to get to be the title of an excellent book. We are sorry, because it is meaningless—at least just why a vegetable should be "truck," we have never been able to find out. It seems to us that "market gardening" is quite good enough to use a while longer yet. Even our author feels that something more than the slangy name is desirable, for he proceeds to explain that by the title he means "a guide to the raising of vegetables for (Northern) markets."

Aside from this objection, the work is a very valuable one. The quantity of vegetables shipped to Northern markets is enormous, and it represents a business which will continue to grow and be profitable. The publishers of a guide to this business have struck the tide just in time. The book will no doubt have the large sale its merits deserve.

SOME MICROSCOPIC DISTINCTIONS BETWEEN GOOD AND BAD TIMBER OF THE SAME SPECIES.—By Dr. J. T. Rothrock, of the University of Pennsylvania.

This paper has been issued from the regular proceedings of the American Philosophical Society. One of the most important facts here deduced is that the more rapid the growth the better the timber in the same species. We have presented this point several times as regards fast growing species. The facts show that the old belief, that slow growing trees made better timber than fast growing trees, was not the rule. It is, in fact, chiefly from a consideration of willows and poplars alone that the belief originated. Now Dr. Rothrock shows that it is not even true in the same species. He first explains why timber is good or bad. "The difference in the quality of the wood is obviously in the relative predominance of solid woody fibre in the good as compared with ducts in the bad." And he then contends: "For white oak we may contend, other things being equal, the specimen of oak timber with the larger year's growth is the better."

PRACTICAL HINTS ON RIFLE PRACTICE WITH MILITARY ARMS.—New York: Orange Judd Company. This is a small treatise of thirty-six pages, in cloth cover. Useful to those who desire to excel in the use of firearms.

GEO. PETERS, OF TROY, OHIO.—We have to record the death of George Peters, the senior member of the firm of George Peters & Sons, Troy, Ohio, which occurred on the 14th April last. Mr. Peters was a Pennsylvanian, going to Ohio many years ago, and founding a nursery there. He was a prominent member of the Nurserymen's Association, and will be missed by the members thereof. He was known as a very honorable man, fair and just in all his dealings. The business will be continued by his sons.

JOHN SHERWOOD.—Mr. Sherwood was one of the grand race of gardeners of the generation now passing away, whose thorough love of their profession, and the intelligence they brought to bear on it made Philadelphia famous in horticulture over the whole county. He was one of the earliest

supporters of the Pennsylvania Horticultural Society, and one of its ablest managers to the last. He paid great attention to the introduction of new plants and the improvement of the old races. In camellias and roses he was particularly successful in raising new varieties. Of these Rose Sherwood's Musk Cluster is still a very popular Noisette rose, and Camellia Sherwoodii and Mrs. Cope are yet among the most appreciated of these beautiful flowers.

Mr. Sherwood was a native of Scotland, and was in his seventy-seventh year when he died, on the 3d of May. He was particularly welcome everywhere, by his never-dying good nature. To have an hour with Sherwood, was always regarded as better than medicine, and possibly few have ever passed from gardening circles in Philadelphia more sincerely esteemed.

ADOLPH STRAUCH.—Probably not since the death of A. J. Downing has landscape gardening in America met with a greater loss than by the death of Mr. Adolph Strauch. He was a native of Prussia, born in 1822, 30th of August, and died in his sixty-first year. But he was hale and hearty when the editor saw him last year, and with the promise of many years of usefulness. He came to America when comparatively young, and was on his way from New Orleans when the late R. B. Bowler, of Cincinnati, a first-class judge of a good gardener, met and engaged him. Cincinnati has been made beautiful, chiefly by his teachings, and Dayton, Nashville and other places have all profited by his genius. He was remarkable for a disinterested love of his profession. When the writer of this last met him, he was shown by Mr. S. a very handsome gold watch and chain, presented to him by some public body he had served without charge, and which, as he expressed it, he valued more than he would $1,000.

The estimation in which he was held by the Directors of the Spring Grove Cemetery, which he did so much to make famous, is evidenced by the following, which we are glad to print in full:

"At a special meeting of the Board of Directors of the Cemetery of Spring Grove, held Thursday, April 26, 1883, the following memorial was ordered to be entered on the minutes:

"The Board have received the sad news of the death of their late Superintendent, Mr. Adolph Strauch, with a profound sense of the great loss they have sustained, in common with the lot-owners and the community at large.

"Elected Superintendent in 1854, in his thirty-second year, he would have reached his sixty-first birthday on the 30th of August next. At the meetings of the Board he was always present to hear, answer, and advise upon whatever concerned the interests of the Association. His opinions were valued because, his entire time being spent in the grounds, nothing, however apparently unimportant, escaped his vigilant observation.

"Mr. Strauch originated the landscape lawn system for cemeteries; gradually developed its important details, and demonstrated its superiority so clearly that it has been generally adopted, and become the type of many others which have been established within the last ten years. It was clearly the creation of genius, but an eminently practical one, made successful by his great industry, tact and personal popularity. It was not the work of a few years to overcome natural prejudices or the customs of a lifetime, or to surmount obstacles placed in his way by the lot-owners of earlier years, all of whom some years later became zealous for the new system, as well as his strongest friends. The execution of his plans required not alone years of patient labor, which would have discouraged ordinary men, but it became necessary to obtain the means by the sale of large individual lots to make the system successful, and he lived to see it accomplished and spoken of with pride as the sylvan park of the living as well as the dead, now perhaps the most important possession of the people of Cincinnati. Years ago he had filled the measure of his ambition by the consent of his profession, which ranked him as the equal of Repton and Puckler-Muskau as a master of art in landscape creation, which had been finally proved by him to be possible to be successfully applied in adorning and making attractive the last resting places of humanity.

"It is a privilege to say of him, personally, that he was a favorite amongst all classes. A singular modesty, combined with a natural, warm-hearted manner, made friends for him everywhere, who gave him their confidence and respect. Ever ready, particularly in times of bereavement, seldom has any man's advice been sought more confidingly, and rarely has needed counsel been given more disinterestedly.

"Throughout this long period of service, in a position of great responsibility, exposed to its incidental temptations, his honesty was never questioned. He was a man of strict integrity. His fidelity to every interest of this cemetery is universally known, as well as the exact truth, that at all seasons, by night and day, his whole strength, combined with a rare intelligence, was spent in its service and for its advancement. Such devotion is rare. It is simple justice to his memory that we should bear witness to it.

"The more private relations which he occupied to the employees of the Association were a sure test of the man's character. They were honorable, friendly, durable, loving even in special instances; but by none will he be more sincerely mourned than by the humble laboring men and women with whom he was on terms of affectionate sympathy. As the husband and father of an interesting family, he was truly beloved and singularly happy. To his children he leaves the

heritage of genius, the legacy of a good name, to be honored at home and abroad, wherever it shall be spoken.

"On motion, it was resolved that the Directors will attend his funeral as a body, and that a copy from the minutes, signed by them and the Secretary, be sent to his family.

"HENRY PROBASCO, President."

CHARLES ARNOLD.—This famous horticulturist died at Paris, Ontario, on the 15th of April, in the sixty-fifth year of his age. He was an untiring experimenter in the improvement of fruits and his hybrid grapes, raspberries and grains were excellent acquisitions. He was a native of England, but had been most of his life in Canada.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

AMERICAN POMOLOGICAL SOCIETY—NINETEENTH SESSION.—The Pennsylvania Horticultural Society having invited the American Pomological Society to hold its next meeting at Philadelphia, the undersigned give notice that the nineteenth session of this National Association will be held in that city, commencing Wednesday, September 12, 1883, at 10 o'clock A. M., and continuing for three days.

This session will take place at the time of the fifty-fourth annual exhibition of the Pennsylvania Horticultural Society, at Horticultural Hall, Broad near Locust street.

All horticultural, pomological, agricultural, and other kindred associations in the United States and British Provinces are invited to send delegations as large as they may deem expedient, and all persons interested in the cultivation of fruits are invited to be present and take seats in the Convention. It is expected that there will be a full attendance of delegates from all quarters of our country, and that this will he the largest and most useful meeting ever held by the Society.

The catalogue of fruits published by the Society includes nearly all the States and Territories, and is filled with a great amount of information as to the fruits adapted for culture in the respective locations. Some of these are yet incomplete, and it is the object of the Society, from year to year, to fill the blanks and bring its catalogue nearer to perfection. To accomplish this object as fully as possible, the Chairman of the General Fruit Committee, P. Barry, Esq., Rochester, N. Y., will send out the usual circulars of inquiry.

When we consider the great importance of fruit culture in North America; its rapid progress during the last thirty-five years under the beneficent action of this society; the great value and rapidly increasing demand for its products at home and abroad, we feel warranted in urging the attendance of all who are interested in the welfare of our country and the development of its wonderful resources in this branch of agriculture.

Arrangements have been made with hotels and some of the railroads terminating in Philadelphia for a reduction of fare. In most cases it will be best for delegations to arrange for rates with the roads in their localities.

A local committee of reception has been appointed, to whom are confided all matters pertaining to the reception and accommodation of the members and delegates of the Society. The Chairman is Hon. J. E. Mitchell, 310 York avenue, Philadelphia.

At the last meeting of the society it was decided in future to encourage general exhibitions of fruits, as well as new varieties or novelties. It is earnestly requested that no duplicates appear in any collection, and that none but choice specimens shall be placed on exhibition. Exhibitors should not fail to give notice as far as possible, at an early date, what room will be needed for their fruits. Six specimens of a variety will be sufficient except in fruits of unusual interest. A limited number of Wilder medals will be awarded to objects of special merit.

Packages of fruit should be addressed to Thos. A. Andrews, Horticultural Hall, Broad street, Philadelphia, for the American Pomological Society. Freight and express charges should be prepaid.

All persons desirous of becoming members can remit the fee to Benjamin G. Smith, Treasurer, Cambridge, Mass. Life membership, Twenty dollars; Biennial, four dollars. Life members will be supplied with back numbers of the proceedings of the Society as far as possible.

MARSHALL P. WILDER,
President, Boston, Mass.
PROF. W. J. BEAL, Secretary, Lansing, Mich.

PENNSYLVANIA HORTICULTURAL SOCIETY.—This Society commenced in April the resumption of its noted monthly meetings with marked success. It was admirably supported by exhibitors, and the numerous visitors were highly pleased with what they saw.

NEW YORK HORTICULTURAL SOCIETY.—This Society seems to be prospering beyond all anticipation. It has now over five hundred members, and numbers are continually being added. It is a pleasure to observe that the reports are now made descriptive, so that even those at a distance may profit by the reports. From the report of the April meeting we gather the following instructive notes:

"New Carnation, 'Buttercup,' from Peter Henderson, Jersey City. Fine light-yellow flower, with scarlet stripes. Committee would like to see a plant.

"Clivea miniata (from Africa), from I. Buchanan, 407 Fifth avenue. Good plant, with one nice spike.

"Hinzie's White Carnation, from C. H. Allen, Garden City, L. I. Extra fine flower.

"*Orchids.*—For the best six specimens, $10 and $5. First to Geo. E. Bennett, gardener to William White. In this lot the Masdevallia Lindenii, with four of its brilliant magenta-winged flowers, being very conspicuous. Second to John Wallace, Paterson, N. J. Dendrobium Wardianum, with three spikes and eighteen flowers, made a brilliant show. The competition was very close for first and second awards.

"For the best three specimens, $5 and $3. First to Frank Cassiday, gardener to L. H. Meyer, Cypripedium Harrisonianum, with five of its massive bronze flowers, being quite distinct.

"For the best single specimen, $3. To George E. Bennett. Dendrobium Pierardii, with two spikes of thirty flowers each. A chaste and lovely variety.

"For the best three Cyclamens, named, $3 and $2. First to John Smith, gardener to James B. Colgate. These were grown in seven-inch pots, averaging seventy-five flowers each, the varieties being very distinct.

"For the best collection of cut flowers, $5 and $3. First to John Smith, gardener to James B. Colgate. This was a very good representative collection, conspicuous being some fine varieties of Calceolarias, Azaleas, Roses, and excellent Cinerarias—not showing so much taste in arrangement, however, as the collection to which second premium is awarded, they being quite tastily arranged, the flowers also being fresh and good. Second to Charles E. Parnell, gardener to W. D. F. Manice.

"For the best six pots Strawberries, $3. To Joseph Dunbar, gardener to Miss S. S. Paton. The variety being Seth Boyden, averaging fifty berries on each. The ripe fruit well colored and of good flavor.

"Caroline Goodridge Rose, from Terrence Welsh, gardener to F. Goodridge. Showing it is a continuous bloomer."

This is not much, to be sure, out of the immense number of exhibits reported on, but little as it is, and brief as are the descriptions, the remarks tend to convey to people at a distance some idea of why the articles were awarded a premium, and so far as it goes the Society should be encouraged to go further in the work so well begun.

MISSISSIPPI VALLEY HORTICULTURAL SOCIETY.—The forthcoming volume of "Transactions of the Mississippi Valley Horticultural Society will contain a business directory of those engaged in horticultural pursuits; either as producers of fruits and vegetables for market, as growers of trees and plants for sale, as manufacturers of fruit boxes and packages, as commission men and dealers, as seedmen and florists, or as manufacturers of horticultural implements and machinery. The fee is fixed at $5 or $3 for those already members of the Society. No name will be admitted unless accompanied by acceptable reference. Each patron of the directory will be entitled to a bound volume of the "Transactions of the Society" free, by mail.

The late meeting in New Orleans was in every respect a great success. The large number of papers presented and the discussions thereon, were of the most practical character. In this respect, Mr. Parker Earle thinks, it surpassed all meetings of the kind heretofore held in America. The "Volume of Transactions" will be published as early in the summer as possible, and will embrace all of this valuable material. The Society has no funds except as obtained from membership, the fee for which is two dollars yearly. W. H. Ragan, Clayton, Ind., is Secretary.

HALL OF THE NEW YORK HORTICULTURAL SOCIETY.—It seems we gave too much credit to the generosity of New York when we implied that the new hall of the Society was bought by subscriptions, in the sense of subscription gifts. The Society has issued twenty-year bonds at four per cent. to cover the subscriptions.

THE
GARDENERS' MONTHLY
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DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

VOLUME XXV. JULY, 1883. NUMBER 295.

FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

AMONG THE FLOWERS.

BY VALENTINE BURGEVIN, KINGSTON, N. Y.

(Concluded from page 162.)

Amateurs who chose the cultivation of flowers for their pleasure have spent part of their fortune in buying plants, cultivating and exhibiting them for the benefit of their fellow citizens, and have harvested a great deal of honor and satisfaction. Horticultural societies held their yearly exhibitions, and every lover helped to make them a success. Rare plants were sent from all around and shared in the triumph. It was a pleasure to behold these elegant temples of Flora where such perfect collections and such great varieties were exhibited. The æsthetic tastes of the German people seemed to lead up to these displays. The education of the humbler class of people even tended towards it. A laboring man's wife, for instance, saved a few pennies from her husband's wages, bought a few plants in market, carried them home in triumph, placed them before her window together with her geraniums, balsams, asters, the highly and general beloved rosemary, sweet basil (without those a collection of that kind would have been regarded very imperfect) and other plants which she had collected and planted in tin basins, paint kegs and boxes. She smiles happily as she beholds her flower garden. She loves flowers dearly and wants others to admire them. The children are allowed a little spot to make a flower garden, and are encouraged and sustained. Thus a taste grows up with them, and they may in after life, perhaps in a different part of the world, create a little paradise in some wild, isolated and forsaken place, Who would say then that the cultivation of flowers was not a blessing of heaven?

In those days greenhouses and conservatories were differently constructed to what they are now. They had sun catchers and were covered with straw mats and shutters at night. They were heated by a smoke flue to keep the frost out, which in very cold weather caused considerable difficulty. Plants were only housed for preservation for summer blooming; consequently flowers in winter were a very scarce article. There were hardly, fifty years ago, so many flowers in the whole winter up to March, through the entire Germany as there are now used during the holidays in the city of New York alone. Greenhouses began to look bright from March 1st. All the people cared for was to have plenty of flowers for their exhibitions, which took place in April when masses of camellias, azaleas, French roses, exquisite cinerarias, and all leading plants in bloom were exhibited

to the delight of the public and the benefit of the horticultural societies. A night blooming cereus, passiflora or a sensitive plant was looked upon as a wonder of nature. A Stapelia was shown for its disagreeable smell, and people were laughed at on account of the funny faces they made when induced to smell of the flower. Shade trees were only planted in public places and along roads. Fruit trees were planted around homes and answered for both purposes. The general landscape was even delightful to behold. The sunny hills in March were blue with violets which scented the spring air with their heavenly odor; the blue-eyed forget-me-not by the brooks, the nymphæas in the ponds. The meadows, the roadsides, the woods, the whole landscape was embellished from spring to fall with pretty posies. The song of the lark from the air and of the nightingale from the trees, can never be forgotten. Ivy covered whole buildings, while plants, timely in bloom, were growing in walls, old ruins and churches. In looking at this one is reminded of the old story they tell of an ox which was hoisted up to a steeple to eat the grass.

The German linden is famous, when in bloom, for its healing and nourishing fragrance. So also is the large German honeysuckle, while the German camomile possesses the greatest medical qualities. The old people used to say, "Take off your hat for every camomile flower." No doubt every plant is good for something if we only knew its merits. The sweet spring flowers furnish the first bouquet from the lover to his heart's delight, and rose and peony petals out of the gardens, and the beautiful scarlet poppy and the blue cyanus from the meadows furnish principally the strew flowers for the memorial processions on Corpus Christi day. How gracefully sometimes school girls trim their hats with flowers. Women ornament themselves on various occasions with flowers and vines, often carrying a bouquet on Sunday when they go to church. Youths stick a flower in a button-hole, and men often take a flower between their lips, and they never had a feast without some decoration of flowers. The chrysanthemums with their bright colored beautiful flowers which are distributed in almost every garden, not only add considerably to the pleasantness of the last fall days, but together with all the rest of the flowers which Jack Frost has not yet reached, they form sacred tributes to the memory of deceased relatives and friends on their graves on All Saints' day. And with the fading of the flowers and the brilliant masses of glossy scarlet berries of the fire-thorn (Mespilus pyracantha) the season closes.

Thus it will be seen that in the olden time the people were not without their delights and their pleasures, and if they could not boast of as great art and as great varieties as the people of the present day in gardening and horticulture, they had the substantial satisfaction of feeling that all their simple, and indeed, sensible tastes were charmingly and luxuriantly supplied and gratified. Progress is always moving, but memory often turns back and pauses over the bright spots full of delightful reminiscenses in the long past.

GROWING HEDGES.

BY T. G. YEOMANS, WALWORTH, N. Y.

To grow a hedge successfully, a few matters of importance should receive careful attention. First, make choice of good plants, as uniform in size as may be, cutting off the tip of the tap-root, and the top about two inches above the collar; and plant in single row, plants six inches apart, and cultivate as well as one would a row of potatoes. In the spring, one year from planting, cut back to within six inches of the former cut, and the second spring cut again to about nine to twelve inches from the preceding cut; if it grows well leave it about one foot higher each spring at cutting, till it reaches the height desired, giving it at top the desired shape, pointed to the center, and sloping sharply about half way (from top) to the ground.

Spring pruning causes more vigorous growth, while summer pruning checks or retards it; thus the trimming in spring, till the hedge is formed, tends to grow it quickly. Let all future trimming be in summer, which will be easily done while the wood is soft, and check the growth, thus easily keeping the hedge in form with only a small amount of pruning, which should be done two or three times during the growing season, and will thus be less labor than one pruning of hard wood; at all times keep the hedge in more perfect form.

LAWNS.

BY CHARLES E. PARNELL.

It is an old but a very true saying, that a smooth, closely-shaven lawn is the simplest and the loveliest element we can use in the adornment of our grounds. We may procure the choicest flowering plants as well as the most rare ornamental trees and shrubs that our nurserymen and

florists can obtain, but unless we have a good lawn all our efforts will be in vain, for depend upon it a good lawn is as necessary to complete the adornment of our grounds as a good carpet is to complete the furnishing of our rooms. We may take our rooms and furnish them with the rarest works of art and the most expensive furniture we can obtain, but if we leave the rough pine floor uncovered or unstained, it has anything but an attractive and finished appearance. There appears to be something wanting to render them complete and enjoyable. As it is with our rooms, so it is with our grounds. If they contain the most costly plants and the choicest ornamental trees and shrubs we can obtain, while the lawn is neglected and uncared for, what attraction have they for us? None; the simple fact being that the one thing necessary to render the whole complete and enjoyable is wanting.

If the lawn, then, is so necessary in the adornment of our grounds, it should be properly attended to and cared for. I say properly, for a good lawn is well worth all the time and care an intelligent person can bestow upon it; and it is my opinion that more lawns are ruined from ignorance and neglect alone than from any other cause. If it is our intention to prepare good new lawns, it is absolutely necessary that the work be thoroughly and properly done, for a good lawn will last many years if the ground has been properly prepared, the proper grass or grasses selected and sown, and last, but not least, the whole property attended to and cared for.

In forming a new lawn, the work should not be too hastily and imperfectly done, as this will prove to be a serious mistake, and one that cannot be rectified afterwards. In the first place, we must see that our grounds have the desired grade, and that they are thoroughly and properly drained and in the condition necessary to produce a good crop of vegetables; if so, they will produce good lawns. The preparation of the grounds is best done in the fall, so that it can become well settled by the time we are ready to sow the seed in the spring. Prepare the ground by giving a heavy dressing of well-decomposed stable manure, and work it in well by ploughing thoroughly. A subsoil plough should follow the common plough. Then harrow thoroughly, and finish by levelling the whole as neatly as possible. As soon as the weather becomes settled in the spring, apply to each acre from five to six hundred pounds of bone-dust; harrow it in thoroughly, and be careful to have a good surface soil of from eight to ten inches in depth throughout the entire ground, and finish by having the surface as finely pulverized as possible, removing all sticks, stones, etc.

The ground being properly prepared, the next consideration is the sowing of the seed. This should be done as early in the spring as possible, choosing a calm day. The sowing should be carefully done in order to distribute the seed equally over the entire surface, and not in spots, as this looks bad, and is not creditable to the sower. Sow thickly at the rate of from four to five bushels to the acre, and rake the seeds slightly in. Give, if possible, a sprinkling of soot or wood-ashes, in order to render the seed distasteful to birds, and finish by rolling thoroughly.

What varieties of grass to sow in order to obtain a satisfactory result is really a serious question. I have no hesitation in saying: Sow June or blue grass, Poa pratensis only; no mixture, no white clover, nothing but pure, clean June grass. In advocating the sowing of June grass, pure and simple, I am aware that I am treading on dangerous ground, for I know that many of you will differ with me. I admit that the June grass will not form a lawn quite as soon as the various mixtures known as lawn grass, but a lawn of the June grass, when obtained, will be found to be well worth waiting for. June grass will thrive in almost any soil and situation, with full exposure to the sun or in partial shade, and in seasons of drouth, when everything is suffering from want of moisture, the June grass will retain its verdure to the last. However, some will insist upon having a mixture; and it is said a very good one can be made by adding two pounds of sweet vernal grass; Anthoxanthum odoratum, and one pound of white clover, Trifolium repens, to four bushels of June grass. This is a mixture highly prized by some, but I cannot see of what benefit the clover is, for it is my opinion that it would destroy the young grass, and eventually die out itself. About the middle of June our lawn will be looking pretty green; but among the young grass a great many weeds will be noticed, and the temptation to remove them will be very strong; but do not do it, for, depend upon it, any attempt at their removal at this time will do more hurt than good. About the first of July our lawn will be ready to be mown; but we must not cut too low, and the clippings should be permitted to remain in order to protect the young and tender roots. After mowing, roll thoroughly; and after this mow weekly, if necessary, until the grass ceases growth. In the autumn the annual weeds will have disappeared,

and the perennials can be cut out with a stout knife.

It often happens that it is very inconvenient to prepare new lawns, and in such cases we must try to restore the old. In order to do this properly, we must commence in the autumn. First, fill up all inequalities by carefully lifting the sod, filling in, and replacing it; at the same time, remove all perennial weeds, and then give a good dressing of stable manure. As soon as the weather becomes settled in the spring, the manure should be removed, then rake thoroughly, using a good iron rake, and be particular to remove all dead grass, moss, etc. When this is done, give a good dressing of bone-dust, and sow grass seed as for a new lawn. Roll thoroughly, and, as soon as the grass is long enough, mow; mow weekly throughout the season, excepting in seasons of severe drought. It seems almost superfluous to remark that mowing should always be done with a lawn-mower in preference to the scythe. The work is thus more quickly accomplished, to say nothing of its neater and more attractive appearance when finished.

After the lawn has become established, it should be properly cared for; every spring it should be carefully examined and all perennial weeds removed, a good dressing of bone-dust or ashes given, and the whole thoroughly raked and rolled. Mowing should also be attended to from the time the grass commences to grow in the spring until growth ceases in autumn. Once a week is none too often to mow, the clippings being permitted to remain in order to protect the tender roots; a rake should never be used on the lawn after it is cleaned in the spring. If it becomes necessary to use a rake to remove the clippings, on account of their unsightly appearance, it is absolutely certain that the mowing was not done at the proper time. In mowing, avoid cutting too close, for, depend upon it, close mowings and a frequent use of the rake will soon destroy the finest lawn. Close mowing encourages the growth of very many troublesome, noxious little weeds, as well as the great pest of lawns—crab grass—Panicum sanguinale. It should be remembered, however, that no lawn can be maintained in good condition unless it is frequently and thoroughly rolled. Moles are sometimes very annoying; the only remedy for these pests consists in the proper use of a good trap. A few words as regards sodding: at the best it is slow and expensive work, and, unless for places of very small extent, I would not advise the use of sods. In forming new lawns, it is sometimes absolutely necessary to lay sod along the margins of walks, and also on steep banks, as heavy rains might wash away the soil before the seed has had time to vegetate; any clear sod can be used for this purpose, care being taken to firm it well with the back of the spade. In seasons of severe drought, some resort to watering; but unless one has an abundant supply of water and the necessary facilities for doing the work thoroughly, it is better not to make the attempt, for anything short of a thorough watering will do more hurt than good. I think that if the ground is properly prepared, the mowing properly attended to, and the clippings permitted to remain, in order to protect the young and tender roots, little or no injury from drought need be apprehended.

I am often asked, What is the best manure for lawns? I do not think that there is anything better than good stable manure applied just after the ground becomes frozen in the fall, and removed as soon as the weather becomes settled in the spring. Some, however, decidedly object to stable manure, on account of its untidy appearance, and so bone-dust can be substituted. Its effect, however, will not be noticed so soon. In forming new and restoring old lawns, an abundant supply of good stable manure is indispensable. Guano and commercial fertilizers are much esteemed by some, and more or less is said in their favor; but as far as my experience has extended, I have found them to be very variable in their results. In wet seasons they are very satisfactory; but in seasons of drought. the result is quite the reverse.

Again, some object to the use of stable manure, for the reason that it contains the seeds of many noxious weeds, and in this way they would introduce them into their lawns. Now, I would not apprehend any danger from this source, if the lawn has been properly attended to, and seeds sown the very instant vacancies are noticed; and I have often noticed that wherever any vacancies exist they soon become filled with weeds, no matter what fertilizers have been applied; and it is a most essential point in the management of lawns to encourage the growth of the good grass as much as possible, and thus prevent noxious weeds from taking possession.

The arrangement and proper disposition of ornamental trees and shrubs on the lawn is also very important and deserves the highest consideration. In this paper it is impossible to treat of this as fully as its importance demands, for local circumstances and personal requirement would render almost

worthless any suggestions that I might offer. My only object in alluding to the subject here is the desire to caution all against planting trees and shrubs too thickly, and thus destroy the very object we have in view when planting them. A room crowded full of furniture has not a very attractive appearance; neither has a lawn when thickly covered with trees and shrubs. Grass will not grow in such situations, and in consequence the whole will not present a very attractive appearance. A few well-grown handsome specimens, properly arranged and cared for, with a smoothly mown lawn, will give more satisfaction and pleasure to all who see it, as well as to the favored proprietor.

Fellow members, I trust that you will be as lenient in your criticisms as possible, for I acknowledge my inability to instruct you. But, when called upon to prepare an essay, I could not find it in my power to decline, for I would not wish to give any person the opportunity to say that the officers of this Society — a Society that has so often honored and rewarded me—should ask me to perform any proper service for them, and ask in vain.

[This excellent essay was read before the New York Horticultural Society at its April meeting.—Ed. G. M.]

EDITORIAL NOTES.

RAISING GLADIOLI FROM SEED.—It is no more trouble to raise Gladioli from seed than to raise the most common vegetable; with the simplest garden culture there is an almost absolute certainty of success. Prepare your bed in spring as for any hardy annual; the soil should be made fine and comparatively rich; sow the seed in drills, cover to the depth of one inch, hoe and weed sufficient to keep the soil light and clean, take up the bulbs after the first frost or before if ripe, store them during the winter in a dry cellar or room free from frost, plant them out again in the spring following, and in the ensuing summer very many of them will flower. With the convenience of a hotbed, or frame, bulbs may be produced from seed in one season that will very nearly all flower the second. It will require a little more care and trouble to grow them in this way, but the increase in the size of the bulb will more than pay the extra cost. One of the chief advantages, however, in sowing in a frame is that in case of a heavy storm, the young plants may be protected by the sash that during all heavy rains should be kept closed, as the young plants rarely recover after the leaves have been bruised or broken down. I know of no pleasure in gardening equal to that of growing plants from seed.—*Garden.*

TRAPPING INSECTS.—Referring to insects which crawl up or down the trunks of trees, Mr. J. W. Manning tells the Mass. Horticultural Society: "For tall elm trees, which cannot be reached with a syringe, printer's ink on a band of paper round the trees, or a metallic collar filled with oil, may be used. A box set round the base of the tree, with a trough for oil, was used in Mr. Clapp's orchard, in Dorchester, nearly forty-five years ago. The first set of boxes lasted twenty years, the second set still remain. They cost about two shillings each. The use of these methods would be of more benefit if a general application should be made to all the trees infested. It is a singular fact that the canker worm will eat everything up to a certain division wall, while beyond the wall not one will be seen. The orchard of T. C. Thurlow, West Newbury, was devastated for years by the canker worm, but the use of printer's ink, at the expense of four and a half cents per tree, was followed by a crop of nine hundred barrels of No. 1 Baldwins, seven hundred the next year, and fourteen hundred barrels the third year."

NEW OR RARE PLANTS.

NEW CRESTED FERNS.—Those who keep a lookout for new varieties of native plants often find them in the woods. At a recent meeting of the Germantown Horticultural Society an exhibitor had present a distinct variety of Aspidium acrostichoides. The divisions of the fronds are deeply incised, and the whole frond of a crimped, or wavy outline, quite unlike the typical form. The same exhibitor has a crested form of Aspidium Noveboracense, a decided acquisition. Both were obtained from the woods near Germantown.

ANDROMEDA JAPONICA.—Flowering so early in the year as this shrub does, it is particularly welcome, and its flowers combine a delicacy of color with elegance of habit seen in no other Andromeda. In this country it usually is a dwarf bushy shrub, furnished with leathery bright green foliage. The flowers, which remind one of those of Lily of the Valley in size and color, are borne in a branching cluster terminating the shoots, each branchlet of the cluster being a long one-sided spike, all the flowers being arranged on the under sides of the stalks. It is an uncommonly pretty shrub, quite

worth growing in pots for conservatory adornment, though we never remember seeing it treated in that way. It is one of the most interesting hardy shrubs in full bloom in the Coombe Wood Nursery. Another species belonging to the same subgenus (Pieris) is also worthy of mention. It is A. calyculata, a North American shrub, with small bronzy foliage and leafy racemes of white blossoms.—*Garden.*

MAGNOLIA STELLATA.—There are few hardy shrubs more beautiful than the present species, which was exhibited in beautiful condition by Messrs. Veitch two or three years ago. From a specimen furnished by that firm the figure in the *Botanical Magazine*, tab. 6370, was prepared. A pot-plant is now blooming in the Winter Garden at Kew. The flower has about fifteen narrow petals, white above, and marked with a faint pink central streak externally. In American gardens it is known under the name of M. Halleana, under which name, too, it is figured in our English *Floral Magazine*, tab. 309. Like so many of the beautiful Japanese plants now cultivated in English gardens, this species is pretty generally cultivated by the Japanese themselves. According to Franchet and Savatier it assumes the proportions of a small tree in woods in Central Niphon.—*Gardener's Chronicle.*

SCRAPS AND QUERIES.

RHODODENDRONS NOT BLOOMING.—"Greenhorn" writes: "I have a bed of six or seven Rhododendrons planted in a space of about 3 feet by 8 feet. They came from a nursery, in March of 1882. They bloomed magnificently last May and early June, as they all had buds on when received. The requisite conditions of soil and the preparation were properly attended to previously, the bed being trenched out to depth of over two feet, the old earth removed, and filled with alternate layers of brush and top garden-soil until even with ground, when bed was finished off with fine soil 6 to 8 inches higher. This spring nothing but leaf buds pushed, there being only one solitary flower truss in the whole lot, while one of the plants did not even make new growth. Is this condition of things the natural reaction in first year after transplanting and only what I have a right to expect, looking for better results next spring? Or is there some fault of my own probable? Should there be anything done in the way of protection during winter? The plants were hardy rhododendrons."

[Our correspondent's Rhododendrons have not bloomed this year because, no doubt, every branch bore flowers last season. When this is the case, they bloom but sparingly the following year. The branches which push from below the corymbs of flowers do not, as a rule, bloom the next year, and this gives a biennial character to the plant, in this respect. If he finds later on, as he probably will, that every branch is capped with a flower bud, and will remove a few of them, the disappointment experienced now will probably not be felt again.

Rhododendrons, although hardy, are the better for a slight covering of leaves or brush in winter. They have a better appearance in spring.—Ed. G. M.]

SPIRÆA VENUSTA.—In Mr. Burgevin's paper reference is made to this spiræa, and a suggestion made that it is related to the well-known "Queen of the Prairie" Spiræa lobata. The writer was favored with a plant, through the kindness of Mr. Downing, and it proved to be a case of dimorphism, known in other plants, but not we believe in this genus of plants. One form has long stamens and short styles—the other longer styles and short stamens. They are both dimorphic forms of Spiræa lobata, but well worthy of being kept distinct by cultivators, and for this the specific name in use, venusta, will be as good as any.

SALVIA FARINACEA.—Mr. Charles E. Parnell writes: "Would you be so kind as to inform me, through the MONTHLY, if there is any difference between Salvia amabilis and S. farinacea? I purchased them as distinct varieties, but see no distinction. Are my plants true to name, or what is the correct name?

[Botanists find no difference between the two. Amabilis is regarded as a synonym. Salvia farinacea is, however, a very variable species, and we are not sure but there may be found differences enough to warrant florists in keeping them apart.—ED. G. M.]

ASPHALT WALKS.—In answer to an inquiry about these, the following is appropriate: "The *Centralblatt der Bauverwaltung* describes a patented composition made at a factory in Stargard, Pomerania, which has for some years past been used with perfect success on the Berlin-Stettin railway for wall copings, water tables, and similar purposes requiring a water-proof coating. The material is composed of coal-tar, to which are added clay, asphalt, resin, litharge, and sand. It is, in short, a kind of artificial asphalt, with the distinction that it is applied cold, like ordinary cement rendering.

The tenacity of the material, when properly laid, and its freedom from liability to damage by the weather are proved by reference to an example in the coping of a retaining wall which has been exposed for four years to the drainage of a slope 33 feet high. This coping is still perfectly sound and has not required any repair since it was laid down. Other works have proved equally satisfactory. In applying this mortar, as it is termed, the space to be covered is first thoroughly dried, and after being well cleaned is primed with hot roofing varnish, the basis of which is also tar. The mortar is then laid on cold, to the thickness of about three-eighths of an inch, with either wood or steel trowels, and is properly smoothed over. If the area covered is large, another coating of varnish is applied and rough sand strewn over the whole. The waterproof surface thus made is perfectly impregnable to rain or frost, and practically indestructible. The cost of the material laid is estimated at not more than ten cents per square foot, and it is stated that this price can be reduced, by at least two cents for large quantities put down by experienced workmen."

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

STEAM HEATING.

BY AUGUST D. MYLIUS, DETROIT, MICHIGAN.

In your February number, Mr. E. Holley, Hudson, N. Y., asks for information concerning steam heating. The use of steam for heating greenhouses is comparatively new, and those who desire to use it will probably find it the cheaper plan to see the different establishments that use steam or have a good steam fitter to do all the work; give written contracts and warrant everything to satisfaction, rather than attempt the fixing themselves.

My own experience was a dear one, costing over $5,000. I have two boilers, combined about 25 to 28 horse-power. They heat six greenhouses, 64 by 22 feet each and dwelling with eight large rooms; each room has a heater similar to heaters in public buildings in large cities. This dwelling is connected by a narrow hallway with shed of greenhouses. The hired hands have their rooms connected with this shed. The main steam pipe goes through these rooms to the dwelling. My experience shows that the horizontal boilers are best for greenhouse heating. The upright boilers are well enough in hotels, boarding-houses and large dwellings, where they can be put in the cellar. In greenhouses they would have to be low enough to keep pipes 2½ feet to 3 feet above the water line. Of course pipes must be above the water line on the horizontal boiler as well, but on account of it being a horizontal, it does not need to be so deep in the ground. One of our florists here has a self-working sucker on the boiler, so the boiler can be put on the level ground, and pipes are all below the water line. This sucker (or whatever it may be called) draws all water in the pipes back to boiler and leaves the steam dry. So far this works well, and if it never gets out of order it would be good for those who cannot have the boiler deep enough on account of water. Greenhouses the size of mine must have eight to ten one inch pipe all around in each greenhouse to keep it 60° to 65°, when it is 15° below zero outside. I have main pipe four feet above water-line, running through shed, and each house connected with one pipe 1½-inch from the main, which is two-inch. This pipe is connected with a coil of four one-inch pipes all around walk back to shed where the four pipes are connected to a manifold, the same as the connection to a manifold where it starts from the main pipe. The manifold at the end of the pipes has an air-cock on top; underneath is the return of one-inch to the boiler, or a main return can be led back to boiler in the form of a two-inch pipe, and all small one-inch returns connected to this. All my houses are now arranged with pipes as above. As to how long steam will last, or how often a boiler must be looked after, night or day, any one can see that a steam boiler must be looked to more than a hot water one. When fire goes down steam goes down too. A steam boiler must be looked after at least every three hours in a cold snap like we had

this winter. I had two hands firing at night; while one slept six hours the other fired. Taking it all in all—leaving out pipes—hot water is the cheaper, but for a large business, or even from five large greenhouses up, steam is cheaper, all counted. For a few houses hot water would be my choice. But, as I am situated now, steam is a great saving to me. On my dwelling alone I save from $100 to $150 in one winter on base burners and coal for them. I expect to burn sixty tons of best hard coal this winter.

GREENHOUSE DECORATIONS.

BY N. ROBERTSON, GOVERNMENT GROUNDS, OTTAWA, CANADA.

This is a subject that we hear very little about, but one of very great importance to the appearance of a greenhouse. In what state do we generally find them? Plants put on the benches, apparently more for convenience than with any idea of giving effect to their decorative capacity, which if placed in another position to contrast with each other, they would do.

I do not know that any definite rule could be laid down for this purpose, but a few hints on one of my methods of arrangement, may benefit some by drawing their attention to it; as it seems to me, it has been unthought of in very many cases.

I will give you, as an example, one of my own houses and try to describe the plan, so as to be understood. This house has a center bench seven feet wide, with a passage running all around, an outer bench, four feet, doing the same. In the middle of my center bench I run a line of my tallest plants, diversifying their foliage as much as possible. In this line I have a row of turned wooden stands, placed at such a distance as will not shade the plants below. These stands rise to a height that will not show the flower-pots. On these I have placed such plants as fan palm, anthuriums, pandanuses, &c., with very fine effect. From this line my sides slope downward to the passages, giving variation to the foliage as much as I can. A foot from the front I have a line of smaller stands, run all around about four feet apart, which rises considerably over the other plants, and if the pots are kept clean will be no eye-sore—or fancy pots may be used. I never put on them a larger pot than a six inch, with such plants as primulas, cyclamens, or some of the smaller growing Bromeliads. This house, facing the noon-day sun, with center bench so arranged, gives me on its back side a fine chance to grow shade loving plants, such as marantas, ferns, &c.

My outside shelf is arranged same as the other, only all sloping to the passage. It has its row also of those stands, at the same distance from the front of the bench. The back part of this outer shelf I devote mostly to ferns, some of the drooping varieties look most graceful on these stands; besides this they take many plants from the benches that occupy much room, and standing amongst other plants are never seen properly to show off their beauty. In fact want of space for my plants caused me first to adopt this stand method; and I now think a house is very incomplete without them. The expense is small; any turner can make them with little trouble, being only an upright and a round top put on, the lower end turned down to fit an auger hole made in the benches, a shoulder being left on for better support. Smallest sizes could not cost more than fifteen cents each; for large plants they must be stronger. The stands to be painted green. Even in the spring of the year, when a large stock of bedding plants are being got ready, I make them very ornamental by placing them ribbon fashion on my benches, instead of having them scattered all over the house. Thus placed when you go to put them outside you have them all together; this often looks so pretty that one is almost inclined to have a portion of the house so the whole year.

Cleanliness in your house, your wood work neatly painted, and your pots nicely washed, all dead leaves removed; of the latter nothing need be said, as it is not only unsightly but the cause of many other annoyances. I hope that these few hints may do good, and bring some one else to the front with his opinions on this subject.

[Excellent suggestions for others besides gardeners.—Ed. G. M.]

FACTS ABOUT STEAM HEATING.

BY E. C. REINEMAN, PITTSBURGH, PA.

A great deal has been said in your columns about steam heating, and its advantages in all respects in heating greenhouses, over all methods. I thought I would give my own experience, it being more practical than some others, and so may be of some value to parties contemplating putting in steam for heating purposes. So much is claimed for steam heating, in regard to saving time, fuel, attention, regulation of temperature, first cost of construction, &c., that it is really astonishing that every florist in the country does not take advantage of the inducements offered and saddle around at once and put in steam, especially those in the

East who are the most successful in growing plants and flowers, growing them without steam heat, as well as we do with it. Our city takes the lead in steam heating, having six large establishments all heated by steam, but nothing extraordinary is produced in the way of growing cut flowers, as all the fine flowers that are used in our city and and as far west as Chicago, are shipped from the East.

Our plant house consists of 30,000 ft. of glass, heated by one boiler of about 25 horse-power, and to heat this extent of glass it requires over 6000 ft. of 2-inch pipe, which to heat by low pressure of steam as some advocate, is ridiculous, we using as high as 50 lbs. of steam with all the valves open, to keep near the desired temperature in cold weather. But if the valves were all shut off from the boiler the steam guage would indicate about 100 lbs. which is decidedly not low pressure, and to use 4-inch cast iron pipes that are used for hot water heating with any or near such pressure, would be rather dangerous, as we had two or three bursts with our pipes of 2-inch. Some assert that houses situated two or three hundred feet from the boiler are as easily heated as those near it, which I will show of my own experience does not prove so, as we have some of our houses 200 ft. from the boiler and some not 10 ft. which are kept at 65° or 75° with almost any pressure of steam, and those 200 ft. away want about 10 lbs. steam until they get to 65° for there is naturally more condensation, than near the boiler, where we have live steam at all times.

In regard to saving fuel, I will give an idea what we use throughout a season, and then let others judge for themselves whether there is a saving of one-half or one-third, which I doubt very much. We use between 9,000 and 10,000 bushels of coal each season, aggregating about 350 tons, at a cost of between $400 and $500; but as we haul all our own coal we save very nearly that amount, which would make the total cost of fuel delivered on place about $800 per season. At the same time bear in mind that we are in the coal region and have comparatively cheap fuel, as our prices range from two cents to six or seven cents from the lowest to best quality of coal. Summing up our coal bill for last January it amounted to $73.00. It must also be understood that it takes a much greater fire to generate steam, than it does to heat water or flues, and as soon as your steam goes down, the pipes get cold, whereas by hot water or flue heating they remain warm for a long time, and for that reason it requires close attention to have complete control of temperature by steam heating; for you have, say 15 lbs. steam on the guage and have the houses at the desired temperature and then the fire may be forgotten, as is often the case, the steam goes down and the houses get colder in less than one hour. There is no doubt at all that steam heating takes more attention than any other system, especially if an even temperature is desired, as our fire must be looked after every fifteen minutes in cold weather to keep up steam, and consequently there must be a competent and reliable man to take charge of the firing all night, another expense of no little importance, as we keep our fireman from October till the end of May at a salary of $9.00 per week. Some parties tried to fire with their greenhouse hands, and had them work one-half day and fire at night, but they had to give it up, as it is impossible for a man to do that for any length of time; for to fire all night is, as I have experienced, much harder work than any of the greenhouse hands' day labor. I would rather work two full days than fire one night. I will admit that all large concerns heated by hot water or flues, need a man all night to look after the many fires, but for places of 15,000 ft. of glass or little more, it is not necessary; but with steam heating you may depend on it that it is impossible to do without one.

A great mistake with some florists is to have only one boiler, for if anything should happen to it, they would be left at the mercy of Jack Frost, and would probably lose their whole stock, as it takes considerable time to make repairs, and while making them you can't have any steam to heat. I don't want to intimidate any one as concerns danger, but at the same time I wish to say that something might happen, and if you have only one boiler, as we had the first year we started, you may be tried severely as we were; in fact once I gave up all hopes, for the temperature in the houses got near 32°, but we overcame the difficulty in time to prevent any further trouble. Now we have two boilers and if the one should "blow up" and there is anything left of the other one, we fire in it at once, but there is not much danger of bursting as long as you have reliable men to fire; even hot water boilers will burst; Mr. P. Henderson told me of two boilers which he had blown up at one time by careless handling.

In April's issue of the GARDENERS' MONTHLY, a florist from Philadelphia, estimates for a house of 22x115 ft., 1000 ft. of 1¼-inch pipe; now we have in three of our houses 22x130 ft., 1000 ft. of

2-inch pipe in each house, and last winter we had trouble to keep our houses near 50° in cold weather, around zero, with 30 lbs. or more of steam on the guage and all the valves open; so I doubt whether that quantity of 1¼-inch pipe would be sufficient. I intend adding 230 ft. to each house to keep about 65° in cold weather, but as our houses are rather higher than the most of that size, some allowance must be made. To conclude I will say that I am not against steam heat by any means, for I would not dream of changing it to any other system of heating; but if I had my houses heated with hot water as perfectly in all details as Mr. P. Henderson's I would never think of putting in steam, no matter what inducements were offered.

ERICA CAVENDISHII.

BY JAMES LESLIE, ST. JOHNSBURY, VERMONT.

I wish to say a word for this old favorite. What handsomer greenhouse plants are there than our old friend as a specimen covered with its rich yellow flowers, and at this April season they can be made to form a very important feature in conservatory decoration, and add greatly to the general display. The same may be said of the Ventricosa section. They are all rich and beautiful.

EDITORIAL NOTES.

HOT WATER TO KILL INSECTS.—Notwithstanding it is nearly twenty years ago since the GARDENERS' MONTHLY published the fact that water heated to 120° or 130°, was the easiest and best remedy against all sorts of insects which infest greenhouse plants, people are very much afraid of it. To encourage these timid people, we give the following bit of experience contributed by a correspondent of the *Journal of Horticulture:*

"Last spring I read in the *Journal* that the best way to get rid of insects destructive to Orchids was to plunge the pots in hot water at a temperature of 120°. I was rather in doubt whether it was safe to do this, consequently tried two or three pots that I knew were pretty well full of woodlice, or, perhaps I should say, appeared so from the condition of the roots. The contents of these pots all changed, the insects were killed, and the Orchids improved. Seeing that no injury was caused to the plants, I last August plunged every Orchid I had in water heated to 120°. I have found that it has not injured one plant. Dendrobium densiflorum that I subjected to this treatment has now no less than forty-two spikes of bloom, and these in a few days will be fully expanded."

GLOXINIA SEED.—To obtain strong plants for flowering early in the summer you must sow the seed near the end of January, or early in February. Sow in five or six inch pots, filled almost level with the rim with a mixture consisting of peat and sand, the former broken up as fine as possible. Drainage should be provided for filling the pots to about one-third of their depth with medium-sized crocks. Place the pots in any of the structures in which a temperature of 65° or 70° is maintained and keep the soil in a moderately moist state. When of a suitable size and before they become overcrowded prick off into other pots or into frames, which should be filled in much the same manner as the seed pots, and place in a warm and close position.—*Gardener's Magazine.*

NEW OR RARE PLANTS.

CAMELLIA C. M. HOVEY.—This new variety fully sustains the high opinion which its American raisers had formed of it before it crossed the Atlantic. It is now pronounced by competent authorities to be without exception the finest Camellia of its color in cultivation—in short, the very ideal of perfection; such were our thoughts on seeing a specimen of it about 8 feet high the other day in the Camellia house at the Royal Exotic Nursery, Chelsea, where, though surrounded by every variety of note in cultivation, it has no peer, whether we take into consideration its size, growth, floriferousness, or the size, form, and color of the flowers. The bush in question was carrying a score or so of blooms, some of which measured five inches across. The flowers are perfectly circular; the petals, though not large, lap over each other in a beautiful way, and the center, often the weak point, is not coarse in any stage. The color is a sort of crimson-lake, with a peculiar and indescribable brightness about it which makes it so much admired, particularly when seen on the plant associated with the broad, lively green foliage. Mr. Hovey, of Boston, the raiser of this variety, might well be proud of having sent to Europe one of the finest Camellias, as well as having stolen a march upon Italian raisers.—*Garden.*

APHELANDRA PUNCTATA.—A pretty South American plant, in which is combined variegated foliage and ornamental flowers. The erect stems bear opposite elliptic acuminate leaves. The green mid-rib is conspicuous in the middle of a white central band, which also extends beside the green veins, this silvery band breaking up on its

margin into numerous small dots, which produce a pretty and distinct form of variegation. The

Aphelandra punctata.

blossoms are produced in a decussate spike, composed of ovate acuminate bracts, which are spiny-toothed at the edge, of a bright chrome-yellow with green tips, somewhat spreading and recurved. The flowers are tubular, curved, widening upwards to the five-lobed spreading limb, and of the same bright yellow color as the bracts. It will form a valuable addition to the many beautiful acanthace-

ous plants in cultivation, of which Libonia, Ruellia, Justicia, and Eranthemum, are familiar types. As in the case of so many good things, the public are indebted to Mr. Wm. Bull, for its introduction.

ROSE WILLIAM ALLAN RICHARDSON.—We have already recorded the introduction of this rose in Europe, named in honor of Mr. W. Allan Richardson, the well-known horticulturist of Louisville, Kentucky. Mr. Schultheis tells the London *Journal of Horticulture*, that it was first distributed in 1878, by Madame Ducher at Lyons. The growth is very vigorous, with long branches, much resembling the variety Rêve d'Or, with a dark glossy foliage. It bears at the tips of its branches trusses of lovely flowers of moderate size, and of a deep clear orange yellow outside. Under glass the color changes to reddish orange. He does not know any rose of that peculiar color.

SCRAPS AND QUERIES.

YELLOW WINTER BLOOMING CARNATION.—The following card comes from a correspondent at Lancaster, Ohio. "I send you per mail this day two blooms of a yellow carnation which originated with me from seed brought over from Germany two years ago. The plant is strong and vigorous in appearance. Believing that this color is something new in carnations I concluded to send you a couple and ask your opinion of them in the GARDENERS' MONTHLY."

[The flowers are of a clear straw color. We have had yellow carnations before, but none that seem as clear and distinct as this. As there is a growing taste for this class of carnations, we are disposed to look on this as a valuable improvement.—Ed. G. M.]

EUONYMUS JAPONICUS.—This is the name of the plant referred to in the following from Jonathan Primrose: "I would like to inquire through the columns of the MONTHLY the name of an evergreen shrub of which I send you a small branch by mail for examination. It is about four feet high and in habit resembling the camellia. Although over thirty years of age it has never blossomed, has been growing in a tub for a number of years, being placed outside throughout the summer and wintered in the cellar."

DOUBLE ABUTILON.—Nanz & Neuner send us a double white abutilon. The stamens, have in some instances, turned to petals, as in the hollyhock and althæa. This firm seems to have a run of luck in the matter of double flowers. Just what ornamental value this double abutilon will have we could not decide from the specimen before us.

DOUBLE HELIOTROPE.—An Altoona, Pa., correspondent wants to know whether a double heliotrope which he has will be desirable. If truly double and as fragrant as the common we should regard it as a very valuable variety; indeed we know of nothing likely to be more popular.

SEEDLING GERANIUMS.—"A. C.," Baltimore, Md., writes: "Please give me your opinion of two seedling geraniums which were raised by me from seed. The pink one was raised from Master Christine, and which I named Don Pedro. By so doing you will oblige a reader of your MONTHLY."

[These came between two sheets of pasteboard, and were pressed flat, and came to hand dry. Don Pedro is a deep pink, the other scarlet. We can only say that they are large handsome trusses, and so far as we can judge from the dry material very good kinds.—Ed. G. M.]

HEATING A SMALL PLANT ROOM OR GREENHOUSE.—"Mrs. S. K. D. M.," Buffalo, N. Y., writes the following list of queries, to which we have already replied in a private letter; but insert here in the hope that correspondents will also give their views:

"What will be the best method of heating a very small greenhouse (5x9), which I propose adding to the south side of my dining-room. It would be entered by a double French window from the dining-room, and the plant bench would extend all along the east, south and west sides, just leaving space in the center to stand and work. I propose to floor it with brick, and carry a pipe from the house hot air furnace (twenty feet away) under the bench and back into the room. Will this radiate heat enough to keep the plants in good condition? If not, can some one advise me what will be the best method of heating the place? Our winters here are long, cold, and devoid of sunshine. Any suggestions about construction, &c., but especially heating, will be most welcome. I notice your magazine suggests the Florence oil stone. Do not they smell badly? And what is the best simple way of ventilation and drainage for so small a space? And will it do to have the bottom filled with earth, and plant a hardy climbing rose, or something of the sort, that would grow under the brick floor? I would not trouble you, but in books I can only find directions for much larger places, and it must be possible to arrange a small place, well exposed as this is, and get good results. Some one must know how."

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

TOMATOES.

BY MR. CHARLES E. PARNELL.

I quite agree with Mr. Hicks (page 82) in his remarks as to the value of the Acme tomato, and do not think that I shall cultivate it another season. I have from time to time cultivated most if not all the principal varieties of tomatoes, and no variety has proved to be so subject to the rot as the Acme. I have also found the fruit very soft and watery when fully ripe. On this account I do not think that it could be carried safely to any distance. Its peculiar color, pinkish red, is decidedly objected to by many persons.

But I do not agree with Mr. H. as to the value of the Tilden and Trophy; at least for the garden. The Trophy proves to be very rough and irregular in shape, and ripens very unequally. The same can be said of the Tilden. In the summer and fall of 1881 the Trophy rotted as badly as the Acme, and in this connection it may be of interest to say that I never noticed the rot among my tomatoes until I cultivated the Acme.

But is Mr. H. certain that his plants of the Tilden were correct and true to name? A year or so ago I was desirous of obtaining a few plants of this variety, but could not succeed. I obtained seeds that were claimed to be Tilden, but when the fruit ripened it was plain to all that there was not a Tilden tomato among them. The majority of them were the Trophy, the rest, I know not what.

But I have never had as favorable an opinion of the Trophy tomato as some have. I always considered it too rough and coarse a variety for garden cultivation. For market purposes it will no doubt answer very well, as size, not quality is wanting there. But in the garden we require something very different; solidity, smoothness, productiveness and good quality is there wanted. The desirable quality of ripening equally on all sides, and close up to the stem, is also most essential.

Although I do not consider perfection reached as yet, still I think there is nothing more to be gained as far as earliness is concerned. I think we have attained to that desired point, and would suggest to those who are striving to improve this desirable esculent to give more attention to shape, smoothness, uniformity of size and solidity.

After a trial of many varieties, I know of none better than Hathaway's Excelsior for the main and later crops. Unfortunately it is several days later than the Conqueror and Canada Victor, so that we cannot dispense with the latter varieties as yet. It may be well to say that I gave the Mayflower a trial last season, and was very much pleased with it. I consider it one of our most promising varieties; but another season's trial is necessary to determine its full value. I intended to have given more fully my experience with the different varieties of tomatoes, for which purpose last season I made copious notes. But I fear you could not well spare the necessary space.

ODOROUS HEDGES FOR FRUIT GARDENS.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

And now comes Pyrus coronaria, better known as the sweet-scented crab, as a candidate for hedge favors. With every confidence in its sterling hedge-worthiness, I cheerfully recommend it, feeling satisfied it possesses all the requisite qualities the enterprising planter looks for.

With these modest encomiums, I thus hopefully present my odorous protege to the appreciative public. Though decidedly firm and unswerving in its ligneous standing, its hedging disposition, notwithstanding, is most excellent. And while sturdily maintaining its bushy character, will yield to no previous fruticose competitor, who may claim superiority in its line of usefulness. By habit, sturdy, by nature, healthy, it has a strong tendency to become very crabbed if maltreated. This denizen of the forest will successfully resist the insidious attacks of every kind of depredator, from bug to bovine. Neither will it give way to the juvenile transgressor or adult rascal who would unjustly tread upon its rights, as a steadfast protector of the alluring strawberry bed, tempting orchard, or seductive melon patch. Wherever it is placed, there will it remain as rigidly unflinching as did Napoleon's Old Guard at Waterloo, and like them, may die, but will not surrender to mortal marauder,

who attempts to force a way through its strong opposing front.

Without losing sight of it as a hedge plant, I beg for a moment to call attention to its merits as an ornamental tree, as all who are entitled to be judges of sylvan beauty admit it is eminently so. And nothing native, or foreign, when planted in the shrubbery, lawn or pleasure grounds, is better calculated to please than is the comely little crab tree.

Well, as I at first began to praise it as a proper candidate for the hedgerow, knowing from experience it is a good subject for the shears, having seen it made positively impenetrable from frequent clipping, I must in conclusion say I consider it a most desirable plant for that purpose. And it can be as readily raised in vast quantities from seed as are hawthorns or apple trees; and as it makes a rapid growth when young, will soon form a strong, dense and beautiful hedge, if proper pains are taken with it. And I think I hinted at the delicious perfume of its rich, rosy, pink blossoms, which is not excelled by "Afric's spicy gales," or the exquisite fragrance of "the Gardens of Gul," or even the sweet odors of "Araby the blessed."

POISONS AS INSECT REMEDIES IN VEGETABLES.

BY T. BENNETT, TRENTON, N. J.

In the April number of the MONTHLY, I notice a gentleman from Connecticut recommends hellebore as a certain remedy for the destruction of the caterpillar or slug on any plant; and seems to imply also that it is a good way to get rid of the cabbage worm or caterpillar. I have no doubt that his statement is true, but he does not tell us that the hellebore is poisonous. It may do very well to apply such remedies to rose bushes, or other plants not eatable, but I don't believe in applying deadly poisons to cabbage. It seems good enough to put Paris green on potatoes, but then it is the tuber that is eaten, and not the vine. If the vine was the part made use of it would be very different. I wish to say that I have been a long time in possession of a remedy for getting rid of these pests on cabbages without endangering human life; but as I think the matter is now of some importance, I will hold it until I see what I can make out of it before I give it away. I would have no objection to go in with some man of means and enterprise, who would be able to plant extensively, when I have no doubt the thing would be very profitable to both parties.

FRUIT CULTURE IN SOUTHERN CALIFORNIA.

BY GEO. H. PARSONS, COLORADO SPRINGS, COL.

Physical Features.—The most strongly marked feature in the physical geography of the State of California are the chains of mountains that run parallel with the coast for hundreds of miles. There are two of these great chains, one rising abruptly almost from the sea line, like a long wall, with only here and there a shallow coast valley, as at Santa Cruz. This is known as the Coast Range. The other is the great uplifted crest of the Sierra Nevada, which through the whole length of the State, in one unbroken chain, forms the eastern horizon of the coast. This range, with its great altitude, its heavy snows, and its immense condensing power, is the source of all the important rivers of California.

These two ranges of mountains divide the lands of the State into two classes of widely differing climatic features. The humid coast valleys, lying outside of the Coast Range, facing the ocean, and marked by a comparatively great precipitation of moisture and slight evaporation, and the more arid interior valleys, lying between the two ranges and characterized by just the reverse, a light rainfall and an excessive evaporation.

The winter rain-current, which is a southwesterly wind blowing in from the sea, has to cross this Coast Range before it can reach and water the interior valleys. According to a well-known law, it parts with much of its moisture and, climbing the elevation, gives a comparatively damp and foggy climate on the ocean face of the range. After crossing the range the rain-current, thus deprived of a large portion of its moisture, passes on to give a lighter rainfall upon the level plains of the interior, until it reaches the tall line of the Sierra, where with the cold of a still greater elevation the remaining moisture is wrung out of the clouds. This winter rain-current, in its sweep inland, passes over the crest of the Coast Range in a more or less continuous sheet; yet like a vast aerial river it avails itself of every break and depression of the range to pour through in still denser volume. And it is opposite these breaks and depressions of the range that we find the line of greatest rainfall in the interior valleys, as the lower and more humid portion of the current has at these points been able to reach the interior without having its moisture wrung out in crossing the range.

The influence of the Coast Range upon the climate of the interior valleys is felt in still another way; by obstructing the inward flow of the daily

sea breeze, with its moister air, its lower temperature, and the frequent night fogs, evaporation goes on in these valleys with scarcely a check the moment the rains are over.

The direction of the two ranges, the Coast and the Sierra, has also its influence, and that far from a favorable one; for by their course from north to south they leave the country open to the full sweep, both winter and summer, of the harsh, dry, parching north wind, which checks and retards all vegetation, and neutralizes the effect of much of the rainfall.

By examining the physical features described above, we find they may be changed in three ways to give a moister and more productive climate to the interior valleys, which are more fertile than the coast lands, but lack rain.

1st. Drop the Coast Range of mountains until it is practically obliterated. By doing this the great winter rain-current would no longer be obstructed in its landward flow, and the humid ocean air having ready access, evaporation would be checked and a dry hot air no longer greedily suck up the surface moisture of the soil.

2d. Keep up the elevation of the Sierra, but bring it slightly nearer the coast, so that it may condense all the moisture possible from the rain-currents.

3d. Wall the land in upon the northwest with mountains, so as to shelter it from the drying winds that now sweep over it, in winter checking and retarding, by their chill, the growth of vegetation, and in summer parching it up and blasting the tender shoots.

The above changes are exactly what have taken place in Southern California. Out of the broken confusion of the Tehichipi and Tejon mountains, where the Sierra and Coast Ranges seem to become inextricably entangled, the Sierra at length emerges and turns eastward under the local name of Sierra Madre as the northern wall of the Los Angeles and San Bernardino country, then turning southward it goes on to form the backbone of the peninsula of Lower California. Stray fragments of the Coast Range rise at different points but reach no great height. This breaking down of the coast range throws the whole valley system of the southern part of California open to the sea, making it practically a vast system of coast valleys, with the Sierra as a background. The sharp turn eastward of the coast line south of Point Conception also brings the sea nearer to the Sierra, making its influence more felt, while the deflection of the Sierra to an almost due east direction, turns it into a huge barrier, raised directly across the path of the cold, dry north wind, which sweeps the upper portion of the State. Under the shelter of its peaks, which range in elevation from 6,000 to 11,000 feet, these southern valleys nestle, looking from the snow-clad crests above them out toward the warm southern sea.

Boundaries.—This highly-favored region, "beautiful for situation, the joy of the whole earth," is known by the general name of Southern California. It extends from the southern boundary line of the State northward along the coast for two hundred miles to Santa Barbara, and eastward over one hundred miles to the Sierra range. It embraces the counties of Santa Barbara, Ventura, Los Angeles, San Diego and the southern portion of San Bernardino, including within these boundaries about twenty millions of acres. Its main features are a coast plateau rising from the sea to an elevation of 1,500 feet, and numerous valleys or interior plateaus, at a greater elevation, opening into it from the mountains.

Climate.—The climate of this region is as varied as the face of the country. Along the coast plateau the range of the thermometer is very slight and uniform, the extremes being 65° to 80° in summer and 25° to 35° in winter. The following table shows the average temperature for each month, during the last five years in the central part of Los Angeles county:

January	50¼	July	68½
February	52¼	August	69
March	53¾	September	66¼
April	57	October	61¼
May	61¼	November	55
June	66¼	December	53

The interior plateau, owing to the greater dryness of its atmosphere and proximity to the Sierras, has a much higher range of temperature, the thermometer rising sometimes to 100°. But these extremes of temperature occur only during a few days in the year, and on account of the dryness of the atmosphere are more endurable than a much lower temperature in the Eastern States. Sultry or hot nights are unknown in any part, and sunstroke is an unheard of thing.

Wet Season.—There are but two seasons, the wet and the dry. The former begins in November and terminates in April, and the latter extends from April to November. The wet season can be best compared to one of the pleasantest of Eastern springs, as it is the season of green grass, wild flowers, budding trees, and mild, delightful out-of-doors weather. The rains generally occur at night,

and the days are clear and sparkling. The annual rainfall will average ten to fifteen inches. Fogs prevail near the sea coast at the beginning and termination of the rainy season. Thunderstorms, cyclones and hurricanes are unknown. At intervals come the northers, which blow without cessation for twenty-four to eighty hours at a time; sometimes warm and sometimes cold; always dry and parching, and when coming before rain, accompanied by a fine impalpable dust. Being broken by crossing the mountains, no serious damage is done, except where their forces are concentrated by some canon or depression in the mountains or hills. In the southern portion of this region, and in some specially well protected places, these winds are scarcely felt. The fogs and winds are apt to follow certain well-defined courses, and frost has its sections of preference.

Dry Season.—During the dry season there is little of the harsh dryness of the climate in the northern part of California. Rains are common in the mountains, with a moist, cloudy air in the valleys, which is very useful by materially checking evaporation. The prevailing winds, being from the southwest, are dry and invigorating, and blow only during the day. At night the land breeze sets in from the mountains to the sea, always making the nights cool and pleasant. On account of the utter lack of rain during this season, it becomes the time of rest for all vegetation, and little growth is made. To produce growth upon such plants as need it, irrigation is required, which is carried on by canals from the streams or by artesian wells. Water underlies the whole of the region, often within five feet of the surface. When very near the surface no irrigation is necessary if the soil be properly cultivated, so as to bring the water within reach of the roots. At greater depths the water is brought to the surface by artesian wells. The underground flow of this water is so great that the number of flowing artesian wells in Southern California is estimated at one hundred.

Soil.—The soil of the plains west of the Sierras is formed by the decomposition of the granite of the Sierras, and of the low hills scattered over the plains, with that from the calcareous and sandstone formation of the Coast Range. It is generally of a reddish brown or chocolate color and gravelly nature, and apparently deficient in vegetable matter, excepting along the borders of the streams and foothills, but is in truth rich in everything required for healthy, vigorous and fruitful plant-growth. The land requires generally but little preparation for the plow, except along the margins of the streams and foothills, and is easily worked and cultivated.

The happy combination of all these various advantageous features of Southern California render it the finest fruit country in the world. It is one of the few places where temperate fruits flourish alongside the tropical, and where the apricot can be successfully grown as an orchard fruit. The climate is wonderfully adapted to both animal and vegetable life, and the most delightful occupation in the world can be carried on under the most pleasant auspices.

Best Portion.—It is impossible to say which is the best portion of this region. New places are continually springing up, all with certain advantages, and a selection must depend largely upon personal tastes and wishes. The settler must first make up his mind what he wants, and then make his choice by careful personal examination or by adopting the advice of reliable and disinterested parties who have had long experience in the country. As a rule, it is best to invest in unimproved property, for it is much cheaper and will rise in value more rapidly.

Orchard Site.—Too much care cannot be exercised in the selection of a site for an orchard, and there are certain general laws that should govern it.

1st. The lowest temperature must not be below 25°, and the highest should be 80° to 100°.

2d. The location should not be low or wet, but elevated and open to the free circulation of the air. The table or mesa lands near the mountains, well protected against the winds, are the best.

3d. The cool, moist atmosphere of the coast brings brown scale and black rust to the oranges and mildew to the grapes. To avoid this it is necessary in Los Angeles county to go back to the hills twenty miles in some places. At San Diego, the climate being warmer, ten or fifteen miles is a sufficient distance from the coast to get rid of the disease.

4th. Some means of abundant irrigation is imperative. The water may be near enough to the surface during most years to suffice for mature trees with proper cultivation, but young trees newly planted will always require more water than can be had naturally.

5th. The soil should be a deep, sandy or gravelly loam, with an admixture of some clay and a gravelly substratum free from hardpan, or with the hardpan not less than six feet from the surface.

Planting Season.—The site for the orchard having been selected, the land is fenced, plowed and harrowed and made ready for planting. The

best season for planting fruit trees in Southern California depends much upon the soil, location and kind of fruit. Serious losses often attend too early planting in low bottom lands from excess of water. March and April are perhaps the best months for planting on bottom lands, while higher and drier lands may be planted earlier, as soon as the soil becomes thoroughly wet to work well. Care should be taken not to plant too close, and irrigation should be carefully used, for if applied too freely the fruit will be large and juicy, but of inferior flavor.

Kind of Fruits to Plant.—The most profitable fruit to grow is the olive, next to that the orange, lemon and lime, then the grape for raisin and wine, then apricots, peaches, pears, plums and other temperate fruits. As much of an assortment as possible should be grown so as not to be dependent upon one kind, although no one place will produce every kind of fruit to perfection. Apples, pears and plums are best suited to strong alluvial bottom land, if a little clay the better, while the cherry, peach and apricot do best on a higher and lighter soil. The temperate fruits, excepting grapes, do best near the seacoast, but grapes, oranges and olives require for perfection the warmer and drier air of the interior. Grapes and olives grow and flourish in a soil almost too poor for anything else, but it must be light and the situation elevated and warm.

It will not be necessary here to describe the best methods of planting and cultivating each fruit. This must be learned by the orchardist practically. Some general information regarding the starting of an orchard will be sufficient. More than this must be learned by examining the best orchard, and exercising fully the Yankee privilege of asking questions.

(To be concluded.)

EDITORIAL NOTES.

DESTROYING THE CABBAGE CATERPILLAR.—There are plenty of methods of destroying the cabbage caterpillar, but most of them cost more than the cabbages are worth. A friend of ours employed a boy last year to kill them with a penknife, and thought it as cheap and effectual as anything he had tried. Most other remedies take time in preparation before beginning work. It is, however, well to place on record all that has been done. At the New Jersey experimental station it has been found that the fumes of benzine, as well as the liquid, caused almost instant death, but when applied to the cabbages, small, whitish excrescences appeared on the leaves. Hot water applied to the cabbage destroyed a portion of the worms, causing also the leaves to turn yellow. One ounce of saltpetre and two pounds of common salt dissolved in three gallons of water formed an application which was partly efficient. The most satisfactory remedy tested, however, consisted of a mixture of half a pound each of hard soap and kerosene oil in three gallons of water. This was applied August 26, and examination the following day showed many, if not all of the worms destroyed. The growing cabbage presents such a mass of leaves in which the caterpillars may be concealed that it is hardly possible to reach all the worms at one application. It is of importance, therefore, to repeat the use of any remedy at frequent intervals.

KIEFFER PEAR.—Very warm discussions continue in our exchanges in regard to the merits of this pear. Mr. Hovey makes a very fair summary of some of the points in the Massachusetts *Ploughman*. The fact is that it is really a good addition to the list of pears, and may be the parent of a very valuable race. Its great misfortune is that it received exaggerated praise from its introducers, who have no right to complain when the reaction errs on the other side.

MR. YEOMAN'S PEAR ORCHARD.—The celebrated eight acres of dwarf pears at Walworth, New York, noticed in our pages years ago, still constitute a triumph in dwarf pear culture. According to a recent visit of a correspondent of the *Rural Home*, "the pear trees have been planted a good many years, but they have been so persistently headed back that the highest branches are hardly beyond reach, while the trunks are four or five inches in diameter. They have yielded a fine revenue for many years and have some fruit this year."

FIGS IN THE OLD WORLD.—Mr. W. B. West, of Stockton, gives the following account to the *Pacific Rural Press*:

"The Smyrna fig remains upon the tree until it falls off of its own accord, which occurs when nearly cured. To complete the drying, the figs are spread out in the sun upon a layer of dry grass for a few days. During this time the fruit attracts insects, which deposit the eggs that produce the worms so often found in the imported fig. No doubt the California grower, with more enlightened treatment and appliances, will be able to do away with this serious objection to imported fruit.

"After the figs are sufficiently dried, they are

packed in camel's hair sacks, being pressed down into a solid mass, frequently by the feet of the operator, and are then shipped by rail to the merchants of Smyrna.

"The work of grading and packing the fig is mostly done by women. The figs are dumped from the sacks upon the floor of the warehouse, to be separated into different grades. The operators are seated beside the heaps of figs, and each is provided with five baskets, or as many as there are different grades, into which the fruit is to be assorted.

"The poorest quality is used only for distilling purposes, being mostly shipped to France. The next grade is ground up and made into fig paste. The next quality, most of which have a sun scald on one side, or other defect, is packed in barrels or kegs, as we frequently see them in this market. The number one and two grades are packed into boxes and drums, as we find them at all the retail fruit stands of the city.

"The packing is done by a different set of hands from the graders, and in different apartments. The finest figs undergo a considerable amount of manipulation, being pulled and stretched out, in order, when pressed and flattened at the top of the package, that they may appear much larger than they really are. Smyrna figs are not dipped into lye or other solution; the only application, if it can fairly be called such, is that each operator is provided with a basin of sea water, into which the tips of the fingers are occasionally dipped, to prevent them from sticking."

THE DANDELION has of late become very popular as a salad herb in England. It requires the same routine in the way of culture as Chicory, viz., sow in April in drills, take up the roots when fully grown in autumn, and plant in a dark warm cellar or mushroom house. The young blanched leaves are excellent for making up winter salads, and they come in at a time when the ordinary supply of out-door materials for salading is at its lowest ebb.—*Field.*

JAPAN PERSIMMONS.—Mr. A. Stoddart, of Pensacola, has, probably, some of the oldest and largest imported trees in the State, and the *Commercial* of that city says: "The fruit makes one of the best preserves—by many preferred to the guava—is easily dried, and is largely used in this way in Japan in the place of dried figs, which it is said to excel in taste and flavor."

FRUIT IN MEXICO.—Mr. John E. Russell, in an address before the Massachusetts Horticultural Society, remarked that he did not think apples could be grown in Mexico, even on the Highlands. Peaches can be grown; he saw them dried and pressed into boxes, and called matacatunes by the Indians. Figs grow in every part, and pineapples in many parts. The pineapples of commerce compared with those ripened on the plant as a wild pasture apple compares with a Baldwin. Oranges are produced wherever the ground is not too high. Grapevines in Central America grow most luxuriantly, but produce no fruit.

SUGAR IN CORN.—Just how much sugar there is in Indian corn depends on the variety, the climate, and many other circumstances; but for all practical purposes, three per cent. may be assumed as data for calculations.

CANNING TOMATOES.—The *Prairie Farmer* remarks: "The tomato canning industry has within the short space of three years, more than doubled, and notwithstanding its present gigantic dimensions, reaching over two million cases for the season closing in November last, the business may be said to be yet in its infancy."

TRUFFLES IN PHILADELPHIA.—Under this name the common Puff-ball is sold in Philadelphia, in the autumn, at fifteen cents per pound; but they are very good when young and fresh.

TO GET RID OF RATS.—I shall be glad to give "Plague" a hint how to banish his rats. I lived twenty years in an old country house, and on three separate occasions I had an invasion of rats—not a single rat, but a colony each time. The first time and the first notice of them was a flutter in the pigeon loft, and on going to see I found eight rats in full pursuit. I got steel traps, &c., and caught several, but no diminution was perceptible, there was such a quantity about the place. I then tried the following experiment: I got a box trap, and, after a deal of trouble and patience, caught a rat, and, getting his tail under the door, tied a string to it, then pulled him out, and shaking him till he hung quietly head down, I caught him with my finger and thumb by the back of the neck and cut off the string. I next painted him all over with gas tar, except the head, which must not be touched. This is essential. When I had put as much tar upon him as I could get to stick, I took him to his hole, and let him run in, and saw no more of either him or his companions for that time, till a fresh colony came some years after, which was banished the same way. Care must be taken not to hurt him, and if tar gets on his eyes, mouth, or nose, you must kill him and get another, as he must be able to run through all the holes in the house. I should like to hear if "Plague" succeeds with the experiment.—*H. W. in Gardening Illustrated.*

SCRAPS AND QUERIES.

THE EARLIEST PEACHES SOUTH.—Mr. William Watson writes: "We had our first ripe peaches to-day, Alexander in the lead. Saunders, Wilder, Downing, Ey. Canada and other sorts, claimed to be earlier than Alexander, will not be in for over a week yet. Could you give in the MONTHLY the time of ripening in the different Southern States? It would be of interest to parties planting for market to know what the prospects for competition will be. We can now ship to St. Louis, Chicago and other large markets. Crop prospects in Texas fine, and the crop of Northern tree agents is simply immense."

THE PRIMO STRAWBERRY.—D. Smith, of Newburgh, New York, says: "The Primo Strawberry more than holds its own, with us. It increases in favor. Competent judges, to whom it with some forty other varieties were submitted, gave it their decided preference. It has during the past year been more largely disseminated in this vicinity, and we wait patiently for further developments in relation to it.

RIDDING GARDENS OF MOLES.—A lady whose garden is very much disturbed by moles, and who has not found traps a success for the destruction of the animals, wishes to know what can be done to abate the nuisance. Where traps fail, the next best thing to do is to let a lad watch the garden for a day, and as soon as the moles are seen to throw up the earth, dig them out with a spade. This plan is often followed. The person watching may have some employment near, and every half hour would be often enough to approach where the burrows are. The place must be approached very quietly, as the least sound frightens away the mole. Run the spade into the ground behind where the earth is rising to cut off all retreat, and the work is done.

FORESTRY.

COMMUNICATIONS.

FOREST FIRES.

BY PROF. C. S. SARGENT.

The necessity of devising methods for preventing the spread of forest fires cannot, with the growing demands of a larger population upon our forests, be longer safely neglected. The forest question has become a question of dollars and cents; we cannot longer afford to allow our forests to burn.

The proportion of actually productive forest to population is in New England already too low, and we have long imported most of our forest supplies from Canada, from the Western pineries, and from the South. The center of lumber distribution has moved westward from New England to beyond the Hudson, and then to the shores of Lake Michigan.

The extent of the loss which the country experiences every year from the destruction of woodlands by fire is enormous, and could the actual amount of such losses be computed they would astonish even those most familiar with the condition of the American forests. The division of the tenth census which has been specially engaged during the past three years in studying the forests of the country, has endeavored to gather statistics of the extent and value of the forests burned during the year 1880. The results obtained from this investigation have not been published yet. The information is often vague and untrustworthy, and even after the most careful analysis is so liable to mislead that it will be safer, for the present at least, to use the results as a basis for general discussion, without drawing actual deductions so far as the whole country is concerned from statistical statements in which danger of error is of necessity considerable. Enough, however, will be shown to indicate, with all due allowance for defective returns, that the extent of forest fires throughout the country is infinitely greater than has ever been seriously supposed.

In Massachusetts, to be sure, the amount of property destroyed in this manner is shown to be comparatively small, and it is fair to assume in a community like this that estimates are more carefully made and more accurately returned than in the thinly settled forest regions of the far Western States and Territories. And yet in Massachusetts, in the year 1880, according to these returns, 13,899

acres of woods were burned over, the loss being given at over one hundred thousand dollars. In Pennsylvania, where the value of forest property is more appreciated than in Massachusetts, and the lumbering interests are only second to those of Michigan, 685,738 acres of forest are reported burned over during the year, with a loss of over three million dollars. It is not probable that these statements are exaggerated, and in the case of Pennsylvania they undoubtedly do not fully represent the actual loss from this cause. The returns show that 3,988 acres of the forest destroyed by fire during that year in Massachusetts were in Barnstable County; that Berkshire County lost 1,377 acres; that Hampshire lost 1,150; Essex, 1,780; while in Bristol, Dukes and Hampden the loss was in each case below 1,000 acres, and that Franklin only suffered a loss of one hundred acres.

During the present year a great tract of tree-covered land, probably nearly 7,000 acres in extent, not very valuable forest to be sure, still of very great prospective value at least, was burned over in Barnstable County, and the average annual losses by forest fires in Massachusetts may probably be safely put down at some 10,000 acres. The loss is considerable, but hardly enough to cause any serious anxiety if it was confined to the actual destruction of the wood growing upon the land. But forest fires destroy not only the growing wood but the fertility of the soil itself and its capacity to produce valuable trees again; they, destroy, moreover, the confidence of the community in the value and stability of forest property. The destruction by fire, then, of the wood standing upon a few thousand acres, more or less, does not by any means represent the entire or more than a small portion of the loss which forest fires entail upon the State.

Sufficient attention has not been paid to the effects of forest fires upon the soil and the subsequent growth of plants. We have been accustomed, in treating forest fires, too generally to consider the damage done to the growing wood alone, and have not considered the much greater loss the land itself suffers from being burned over. If only a portion of the trees growing on a tract of land are cut, a sufficient number being left to protect the soil and produce a supply of seed,—if these are guarded from fire and browsing animals which, next to fire, are the most active and destructive enemies of the forest, the same species will continue to grow almost indefinitely and a constant succession of young trees will regularly spring up to replace those which have been removed. This is a system of forest management very often adopted, especially with certain varieties of trees, where scientific forest management prevails; and it is on many accounts a very sensible and economical method, although, of course, susceptible of very considerable modifications to meet peculiar cases of forest growth or climatic conditions. If, on the other hand, a forest is destroyed by fire which kills the trees and undergrowth of shrubs and herbs, the same species, except in the case of some of our least valuable trees, rarely spring up again. Let us take the case of a white pine forest, because the white pine is probably the most valuable forest tree to-day in New England and because we are all familiar with its habit of growth. If a forest of white pine is destroyed by fire this tree does not spring up again. The land which, if only a part of the trees had been cut, would have continued to produce pines indefinitely, is not covered again with any growth of trees for a considerable period. The fire-weed first makes its appearance. The light seed of this plant is often blown for a long distance, and falling upon bare ground germinates quickly, and finally covers the burned surface with vegetation. Birds drop the seeds of raspberries and blackberries, which find sufficient nourishment and light for germination. These, as they grow, cover the ground, and afford protection to the stones of the little mountain cherry, dropped by birds also, or the light seeds of the gray birch, or some of the willows or poplars, which are constantly blowing about, and which will germinate anywhere upon unshaded ground, however barren.

These are generally the first trees which succeed a white pine forest destroyed by fire; but years often elapse before the ground is covered even with such trees. Nature works slowly, and the wounds made by fire on the earth's covering of trees are only healed under the most favorable conditions through the gradual growth and decay of many generations of plants. The cherries and the birch and poplars are short lived, and unless burned up, when the same process of recovering the soil commences again, are succeeded by more valuable broad-leaved trees. Squirrels and other animals deposit acorns and nuts in the ground, and the wind brings the seeds of maples, ashes, and the valuable birches. Such seeds find protection among the poplars and willows which had sprung up on the burned land, and as these die, the more valuable trees get a chance to grow and gradually occupy the ground. This new forest of

hard-wood trees, if protected from fire, will long occupy the ground, and the original pine forest will not appear again until the land, long enriched by an annual deposit of leaves, has been again stripped of its tree-covering, and mellowed by years of cultivation. Such land nearly all over New England, if freed from the plough and the scythe, and guarded from fire and pasturage, grows up again with pine. The different processes, however, by which white pine land, on which the forest has been destroyed by fire, has been again brought into the condition to produce spontaneously another crop of pine, have occupied a long period of time,—so long, indeed, that it must extend through generations of human life. The forest fire, then, which destroyed the pine trees growing upon the land, destroyed, also, the capacity of the land to produce again a similar crop of trees during a period which may be set down at from fifty to one hundred years. The damage inflicted upon the land by forest fires is, of course, not irreparable in a climate like that of New England, where the annual rain-fall is sufficient to always ensure a growth of trees of some sort, if the ground is left entirely undisturbed, and sooner or later, in the ordinary workings of nature's laws, forests will succeed each other here. But in some parts of the country where the rain-fall is so slight that there is a constant and severe struggle between the forest and the plain, and where trees under the most favorable conditions barely exist, a forest fire not only kills the forest but it makes any future growth of trees impossible.

We, in New England, are more fortunate, and it is entirely within our power to regulate the composition of our forests, and maintain a proper proportion between forest areas and farming land.

If, however, forests are subject to constant and unnecessary danger of destruction by fire, there can be no proper system of forest management introduced into the usual economy of the community. There is little inducement to plant a forest, or protect and encourage the growth of natural woodlands, so long as the condition of public sentiment is such that the authors of forest fires are not held responsible for their acts. A man cannot be expected to expend money or labor on his trees, or allow them to grow a year after he can find a market for them, if he has the danger of forest fires constantly before his eyes. There is no inducement, under these circumstances, to allow a forest to mature for timber; it is safer to cut it off for cord-wood at the earliest possible moment, and thus reduce the risk of probable loss by fire.

Under these circumstances it is useless to adopt any of the methods of thinning or pruning by which the value of young forest trees for timber may be vastly improved, or to guard the woods from roaming and destructive cattle; and it follows that a large portion of the profits which our forests could be made to yield, under a different policy are lost.

The forest fires, then, destroy the trees. They destroy the capacity of the land to produce again during long years similar trees; and, finally, they so shake the public confidence in the permanent value of forest property that, even in a State like Massachusetts from which the original forest has long disappeared, and where the value of all forest products is enormously high, capital will not engage in forest production, which, with the condition of our forests, could certainly be made enormously profitable, until the risks from fire are reduced to a minimum. This is a matter of special interest to New England to-day, because upon it largely depends the country's supply of white pine, and the greatly enhanced value in the early future of much New England land.

(To be concluded.)

EDITORIAL NOTES.

FOREST DESTRUCTION IN CHINA.—Writing to the London *Garden*, Mr. Maries says: "Many grand trees and shrubs must have been completely lost by the unmerciful cutting and burning of all vegetation on the hills in China; none but the toughest could possibly survive. Year after year they are lopped to the ground, and when the coarse grass gets too thick they burn, or if a tiger or leopard is in the mountain they burn again. This has been going on for centuries now. They never plant or take the slightest trouble to grow trees, and the result is bare, barren tracts of mountain land, once evidently forest, now useless. I visited Kuikiang Mountains in April, 1878, when the hills were covered with a growth of two or three years. I went to the same places in December the same year, and all was either cut or burnt. It was with the greatest difficulty I was able to get a few of the fine plants I found there the April before. Many of the plants when growing in England still bore the marks of the Chinese mountain fire."

FOREST FIRES.—In view of the great importance of this topic, we give this month, part of a paper by Prof. Sargent, originally communicated to the Massachusetts State Board of Agriculture.

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

LOWER CALIFORNIA BOTANY.

BY CHAS. H. SHINN.

Dr. C. C. Parry is doing a good deal too, in the way of exploration of the Pacific coast. In the Spring of 1882, he made a journey into the peninsula of Lower California. Starting from San Diego, last winter, as he writes to a San Francisco paper, he repeated this journey, taking however a somewhat different course, and extending his journey further. The party of six persons, including two ladies, proceeded to Encenada, six miles South of the Mexican line. After four days journey they reached Sanyal, on All Saints' Bay, and from here made excursions in various directions.

Dr. Parry says that the new horse-chestnut Æsculus Parryi, found last year, was abundant and beautiful.. A Manzineta with willow-shaped leaves, though referred to the Mexican Arctostaphylos polifolia, is perhaps distinct, and is very ornamental. The new wild rose, Rosa minutifolia, was abundant, and has aroused so much interest abroad that it is now to be introduced into cultivation. It has minute foliage covering the branches closely, is of low-spreading growth, and shows pink or white flowers on a glandular mossy cup. A good deal is expected of it when brought under scientific treatment.

A peculiar cactus that Dr. Parry speaks of as found on this journey, is that species of Cereus that Dr. Engelmann proposes to call C. guminosus, because of its furnishing a water-proof varnish, used by the natives. It grows in a discordant and miscellaneous manner, sprawling over the ground, its large joints being unable to uphold themselves. The fruit is said to resemble the strawberry, and to be delicious; so of course, there are Indian festas, at a great rate when it is in its prime. The century plant seen here is Agave Shawii, a handsome species with orange-hued flowers on a thick stalk, densely clustered. This, as other species, furnishes the mezcal, and also fiber. Rumex hymenosepalus, a native dock, that the natives call Canai argie, or sour stems, has, it is said, been found to contain eighty per cent. of tannic acid, in its dried tubers. It is abundant in the sand of the dry river beds, and may prove of considerable commercial value. Dr. Parry evidently thinks that the resources of this peninsula have been unduly neglected, and looks forward to better days for "Baja California."

EDITORIAL NOTES.

EXPEDITION TO CAPE HORN.—The French government is fitting out an expedition exclusively for scientific discovery to Cape Horn. P. Hariot, a student of the celebrated Van Tieghew of the museum of Natural History at Paris, is to have charge of the Botanical Department. He is said to be comparatively young, and full of ardor, and botanists of France are calculating on a good feast of riches from the exploration.

DESTRUCTION OF RARE NATIVE PLANTS.—Since travelling is so fashionable, and people can get to the most inaccessible spots of former times, rare plants are being everywhere destroyed. Societies for the preservation of wild flowers, are being formed in Switzerland, and other European countries.

THE ANNUAL INSECT CROP.—It is worthy of note that on the first appearance of an insect in any locality, they seem to increase in great numbers from year to year; but after this the numbers every year seem about the same. Mr. Moore, of Concord, Mass., has noticed of the Rose-bug: "As long ago as I can remember I saw them as thick as they are now. In 1823 John Lowell described an apple tree as covered with them, and about the same time Dr. Green, of Marshfield, gathered eighty in his hand, from a rose bush, at one grab." This is about the general experience.

CREEPING ARUMS.—In our country we know plants of the Arum family chiefly from the Indian Turnip of our woods, or from the Richardia Æthiopica or calla lily of our greenhouses. In tropical countries they send out rootlets from the stem, and these enter the old or dead bark of trees, and often climb to great heights in this manner, and give a very peculiar character to the forest scenery. We give here a representation of one of these climbing arums, Pothos aurea, which is be-

sides so beautiful in its native country a grand novel ornament of our greenhouses.

ing habit, has been imported from the Solomon Islands. The leaves are strikingly variegated,

Pothos aurea.

Mr. Wm. Bull, of Chelsea, London, who recently introduced it to the notice of cultivators says: "This remarkably distinct Aroid, which is of climb-

heart-shaped, and unequal sided, of a dark green, boldly and irregularly marked by bands or fantastic-shaped blotches of creamy yellow, here and

there suffused with pale yellowish-green. Being of free growth, and having a boldly marked variegation, it will be an ornamental object in the tropical plant stove, where it will find itself at home in clothing walls and artificial rockwork."

From which it appears that it will attach itself to walls as well as to trees.

A NEW KENTUCKY COFFEE.—One of the most interesting botanical facts is the close relationship of the Flora of the Eastern United States with that of Asia, a fact first brought prominently to notice by Dr. Asa Gray, and which receives new strength from botanical discoveries from year to year. A Kentucky coffee allied to one in America is now among the most recent of these. The convenient name Kentucky coffee, is widely applied, though the tree is not by any means confined to Kentucky. It has become a mere name without any of its original geographical meaning—and in this light perhaps Chinese Kentucky coffee will do as well as any other name. This is what the *Gardener's Chronicle* says of it:

"In the last number of Hooker's *Icones Plantarum* are figures and descriptions of some remarkable new plants from various parts of the world, among them a few of more than passing interest. First, there is a species of Gymnocladus from China—G. Chinensis, Baillon. This is the second species of the genus, and it is quite distinct from G. Canadensis, which is cultivated, though not very commonly, in this country. As Professor Oliver remarks, Gymnocladus is the second arboreous genus recently discovered in China, previously regarded as homotypic, and peculiar to Eastern North America; the other being Liriodendron, collected in Kiukiang, by Dr. Shearer and Mr. Maries. The Chinese Gymnocladus differs from the American in the more numerous and much narrower leaflets, which are not acuminate, and in the thick but slightly compressed pod. The seeds are almost spherical, and about three quarters of an inch in diameter. The pod is three to four inches long, and hard and horny in the dried state, but capable of swelling up greatly in water. Mr. F. S. A. Bourne, of Her Majesty's Consular service, who sent specimens of it to Kew from Fokien, states that the fruit is used for washing purposes. The outer shell is steeped for two days in water, and the liquid resulting is used as soft soap, or it can be dried into hard soap. Whether the seeds have the same saponaceous property we do not know, but it would seem that they have some economic application, as they are figured in the late Mr. Hanbury's "Notes on Chinese Materia Medica" (Science Papers, p. 238, fig. 5). Then only the seeds were known. Mr. Maries collected flowering specimens of the Gymnocladus Chinensis at Kiukiang, and he may have collected seeds also. Possibly, too, Messrs. Veitch have living plants of it at the present time. We should think the tree would be hardy in this country, though our summers are probably not hot enough for it to produce fruit."

BEES AND HONEY.—Mr. Thomas Meehan, in a note in the *Bulletin*, of the Torry Botanical Club, says: "I find that the behavior of bees is governed by circumstances. When flowers are abundant they visit those only which they prefer; at other times they examine anything which comes in their way. At the time I am writing, May 18, there is a dearth of garden flowers. Those of the early spring are gone, and the later ones are not well formed. But Columbines in many species are in bloom. The humble bee bores the end of the nectaries and sucks the honey stored there; and the honey bee follows and sucks from the same hole what may be left, or what may be afterward generated from the honey gland. I have often watched closely to learn whether the honey bee bored for honey. Its quick motions are unfavorable to correct observation. I thought once I had caught it boring lilac flowers, but I afterward counted all the flowers that had been bored by the humble bee, and then watched the work of the honey bee on the cluster, and there were no more bored afterward than before. The columbines (Aquilegia), with curved nectaries, such as A. vulgaris and A. olympica, are very favorable for observation, as the slit is made on the upper side of the curve, and the honey bee can be easily seen following after the crumbs that may have been left on the strong one's table. I have no doubt, however, that it would bore for itself if it had the power, and perhaps it sometimes does. The humble bee and the honey bee are evidently not the insects for which the columbine had its beautifully contrived nectar cup provided to induce cross fertilization; and what particular insect was designed to be the favored one, so that it, and no other, could turn its tongue around these twisted spurs to get at the honey in the end, I think no student has yet discovered."

FAILURE OF THE MAPLE SUGAR CROP.—A correspondent writes: "I see by the papers that the failure of the maple sugar crop in Delaware County, New York, is the completest for years, and will damage the farmers some hundreds of thousands of dollars. What is meant by the failure of this crop? I thought there was always sap in trees in the spring of the year? Will some one in the sugar making districts please explain?"

THE DISCOVERER OF BEET SUGAR.—On the 7th of last August a century had elapsed since the death of Andreas Sigismund Marggraf, the dis-

coverer of beet root sugar. He was born March 3, 1709, in Berlin, and died August 7, 1782. At that day he ranked among the foremost of the chemists and physicists of his time. At the age of twenty-nine he was elected a member of the "Society of Sciences," at Berlin. In 1744 this society was reorganized under the title of the "Academy of Sciences and Fine Arts," and Marggraf was assigned to the physical section, and in 1760 became the director of that section.

In 1780 the Academy of Sciences, in Paris, nominated him as foreign member.

The domain of chemistry was enriched by him with a large number of important discoveries, and he it was who first appreciated the value of the microscope as an aid in chemical analysis and research. An investigation of the nature of the sap of plants led him to study those constituents to which it owes its sweet taste, and to the discovery of a substance present in different plants and exactly like the sugar obtained from the sugar cane of India. He obtained sugar from different plants, especially from the mangolds, now known and cultivated under the name of sugar beets. He also instituted numerous experiments regarding the best method of preparing pure sugar from these plants. Marggraf was a man of science; he never thought of making any practical use of his discoveries, even when he was convinced of their practical value.

His successor and pupil, Franz Carl Achard, who was born in Berlin, April 28, 1753, and died on his estate in Schlesia, April 20, 1821, converted Marggraf's discovery into a valuable agricultural reality, by devoting his mental and physical strength, as well as his means, to experiments on a large scale. He died before he saw the fruits of his labors ripen. Achard was the founder of the German beet sugar industry.

THE ART WHICH PRODUCES A CABBAGE.—At a November meeting of the Academy of Natural Sciences, of Philadelphia, Mr. Meehan exhibited a specimen of a cabbage which had, before blossoming, grown to the unusual height of three feet, the spiral coil of the stem, which was to the left, having been thus drawn out without any corresponding increase in the number of leaf scars. The Cabbage, in its natural condition, is an insignificant plant, without any such head of leaves as makes it of commercial value when cultivated. The desired effect is produced by sowing the seeds of the wild cabbage at a period of the year so late as not to allow the formation of flowers, in which case the vegetative vigor of the plant is expended in the production of the mass of leaves, which become better developed and denser as the process of cultivation continues.

SUNKEN FORESTS.—In Neltnor's *Grower*, Mr. M. S. Hubbell states that Professor Teas, of Missouri, gives us an account of his visit to the sunken lands in Eastern Missouri. Hundreds of thousands of acres of dense forest was sunken there by the convulsions of 1812. This sunken tract has since been covered with water from one to ten feet deep, and all timber, including most of our native durable varieties, has long since perished, except the Catalpa, which though dead and in the water for seventy years, still stands erect. This of course means that the dead trees have all rotted away, except the Catalpas. We refer to the paragraph for the sake of the sunken forest question, —a matter that has had but little scientific research.

CONCERNING FIGS.—There are very many strange and inexplicable things in nature, and man is led by instinct or observation to do many acts which appear also to be strange and contradictory. This thought occurs upon reading Count Laubach's recent report upon fig culture at Naples. One of the most pressing duties of the farmer and fruit cultivator is to wage ceaseless war upon insects which infest and destroy the products of his fields. And yet we have afforded us in the cultivation of the fig a paradox which will surprise most of our readers. The wild fig, which grows plentifully in fig-growing countries, is uniformly perforated by an insect, which bores into the fruit and hatches out a brood of insects, which devour the fruit before they leave their home. It would appear not to be a very desirable insect to have about a fig orchard, but such is not the fact, for the fig cultivators of Italy and Asia Minor go into the fields and gather the insect-infested wild figs, and hang them on the branches of the cultivated fruit, in order that the insect may enter it. Can anything be stranger than this? The fig-growers think that the entrance of the insects prevents the fruit from falling off the trees, hastens its maturity, and improves its taste. This operation is called caprification (from caprificus, the Latin name of the wild fig), and the name of the insect tribe is the Blastophagæ. Our farmers would call insect pests with such a name "blast your phizes," no doubt.

When the insect enters and lays its eggs in the wild fig it does so to winter and secure food for its young. When the eggs are laid in the wild fig

they are hatched, and destroy the fruit; when in the cultivated, they are laid in the wrong place, and therefore the progeny never develop. But they do an important work, for they carry with them into the cultivated fig, which usually has only female flowers, the male pollen, and thus cause the formation of seeds. Those who have been consumers of the delicious fig in its dried state cannot fail to have observed that connected with the best fruit there is very often a worm-hole in the end of each specimen, and this is the work of the insect alluded to.—*Journal of Chemistry.*

OUR TULIP TREE IN CHINA.—Mr. Maries says in the *Garden:* "I continued on down the other side of the mountain into the valley to a large dilapidated temple, and with great difficulty obtained permission to live in it. The priests were a sect called Tauists. What a sight was here in the temple yard, surrounded with large trees of Larix Kæmpferi, and in front two of the largest Cryptomerias I have ever seen, one measuring 9 ft. in diameter, and the other over 8 ft. and quite 200 ft. high. Just below were growing lots of fine trees of Magnolia conspicua in full flower, and the Liriodendron tulipiferum, hitherto only known from North America. It was in flower, and I gathered dried specimens to send to England. I consider it to be a different species from the American, though very near it. It is not so large as the American tree. The ones I saw were probably 70 ft. high, and leaves very small compared with the American variety. The priests said the trees were planted by the old Bhuddist priests, together with the Magnolias, Cryptomerias, and Larix. I think it very probable that both the Salisburia, Liriodendron, and Podocarpus will some day be found wild in the mountainous portion of Chinese Thibet, from whence they were probably brought by the old Bhuddist missionaries, just the same as the Cryptomeria was taken by them to China, for I believe the Cryptomeria does not grow wild in any other country but Japan. It certainly is not wild in China, as is generally supposed. I might say that I did not find young seedling trees of Liriodendron, Cryptomeria, and Magnolia; if they were indigenous, one would think that there would be plenty of young seedlings as with other trees. These sacred trees of the old Bhuddists are mysteries still, and will be till the unknown recesses of Thibet be opened up. They may be the remains of old forest trees."

USES OF STRUCTURES.—Much attention has been given of late to noting the behavior of plants and seeds in connection with what seems to be their own immediate good; and a free rein has been given to the imagination in pursuing this path in natural science. In Geranium, Stipa and some others, the dry styles or long awns are hygrometric, and twist or untwist according to the humid conditions of the atmosphere. This has been regarded as an adaptation for screwing the seed into the ground. In falling to the earth the feathery apex will, of course, cause the heavier seed to fall perpendicularly to the ground. But just how the coiling of the awns could screw the seed into the ground without something denser than the atmosphere for the end of the spiral to press against has presented a difficulty to the mechanical mind, and has led some to doubt whether the real secret of the adaptation has been exposed. If correct, it would seem that Dundreary's idea, that the "tail might wag the dog," is not unreasonable. However, Prof. Beal has recently published an account of some experiments with Stipa sparta seeds. He finds that the seeds set perpendicular to the surface do bury themselves in the earth. The exact mode of their doing it is not explained. —*Independent.*

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

GARDENING IN KANSAS.

BY JOHN BUCHI, SALINA, KANSAS.

I received your welcome MONTHLY for March, and found it full of interesting news. I gather from it that gardening in the East is advancing very much. Out here we are getting along nicely too, and although living near the desert—as you were pleased to call it last year—you could not find a finer landscape than we have at present. It would rejoice the heart of any lover of flowers

to see the variety of bloom the next two months will give. The wonder is that they are not more in demand in the East for hardy border plants. There are here wild flowers, finer and larger than any of the cultivated ones.

Hundreds of fine grasses, cactus, and curiosities abound, and if I knew some certain time that you would have a meeting in the interest of flowers I would send some.

Five years ago I visited this part of Kansas and was so delighted with it that I made up my mind to go west. I packed up a car in Pittsburgh with sashes and all things needed at first in gardening, and after many ups and downs I have not regretted it. I have a good home, good greenhouse, 100 hot-bed sash, water-pipes, &c., occupying a half-acre; can sell all I raise on the place. I have ten acres of the best land planted with fruit and vegetables, and better still, all is free of debt at present.

My business will not grow to the size of Ellwanger & Barry's, or Landreth's, but into a very nice one for me. Salina is well situated, being in one of the finest valleys. There are prospects of getting this season two new railroads here. We have water-works, three flour mills, one that makes 600 barrels of flour per day, fine opera house of three stories, &c., and in short the desert is not so bad a place to live in after all.

EDITORIAL NOTES.

SPECIMENS OF PLANTS, FRUITS AND FLOWERS.—When these are desired for editorial examination, they should be addressed to Thomas Meehan, Germantown, Philadelphia, and not to the publication office in the city, as this necessitates a re-shipment to Germantown, and often several days' delay.

CHARACTER OF NURSERYMEN.—An editorial on the death of a Rochester nurseryman, in the American *Rural Home*, has the following: "As he was but a man he was liable to mistakes, but we do not believe that he ever intentionally deceived or wronged a customer. We fear that the number of nurserymen of whom this may be truthfully said is not large."

We think that it is a mistake to say that the great majority of nurserymen will intentionally deceive and wrong a customer. We prefer to believe that the editor of the *Rural Home* has had the misfortune to write hurriedly what he would not have done under due reflection.

HORTICULTURE IN SPAIN.—Mr. Charles Joly continues his essays on horticulture, as at present, in different parts of the globe. Since his essays on the horticulture of England and of the United States, one on that of Spain has appeared. He tells us that political and religious troubles in Spain, as well as in Italy, has retarded the progress of horticulture—but for all this recent occurrences develop the fact that science, horticulture included, has a wonderful vitality in these countries. The northern plateau, and the central portions of Spain, have a sad and denuded appearance; but the plains of Valencia and of Andalusia, both in culture and the beauty of its native vegetation, is not exceeded by any country on the globe.

A RAID ON THE SILVER MAPLE.—In a recent address Dr. Warder says: "And now in condemning the next tree and banishing it from the streets, another set of our good people will feel oppressed. The *Nurseryman* says: * * * 'The water maple is so easily grown, so quickly attains saleable size, it is so certainly transplanted, and the customers get it so cheaply, 'tis no wonder that thousands are planted in every Western town. And yet it is a poor tree for any purpose when compared with others of its own class. It has neither beauty, majesty, nor strength to recommend it, but breaks with every storm. However, it has its use as a civilizer, and is an advance on the poplar tribe. It may have a temporary occupation of the streets under promise of being removed as soon as its legitimate companions, the Norway maples, the red maples, and other slow-growing trees, have come to need the space the water maples have been granted between them. It may be planted as an alternate for its temporary shade, but only on condition that it shall be removed in due time.'" Instead of the *Nurseryman* feeling "oppressed" by these remarks, we fancy he will rather give the good doctor thanks. It is a mistake to suppose that because a tree can be cheaply raised it is therefore a profitable tree.

ENORMOUS FRUIT.—There are pictures of a raspberry going the rounds which gives the fruit of an astounding size. It represents seven fruits, covering not merely the palm of the hand, but extending up to the upper joint of the finger and thumb. The size seemed so enormous that we took measurements. The thumb is three-eighths and the finger two-eighths of an inch wide, while the raspberries are one inch. The hand appears to be intended for that of a full-grown lady, judging by the way the dress ornaments are arranged; so we

have a raspberry which is three times the thickness of an adult's thumb and four times the thickness of a lady's finger. We were about to note that this variety must be "a whopper," when the editorial eye caught sight of a "testimonial" from a prominent horticulturist. It says: "the hand with raspberries is a good representation of the variety—only that they do not show full size—they are larger." We thought a berry three inches in diameter—nine inches in circumference—ought to satisfy any one, but if it is to be larger than this, oh! goodness. But we fancy there was a merry twinkle in the eye when this "testimonial" was dashed off.

HOT WATER CIRCULATION IN THE OLDEN TIME.—During a visit of the writer of this to the Isle of Wight, in 1877, the remains of an old Roman villa were being exhumed, near Newport. It had been covered by the gravitation of the soil during near two thousand years. If there be the slightest inclination, every rain causes a movement of the surface downwards, and though the surface be nearly level, a ruin below the highest point, but a few acres away, will become covered in time, though never an earth-worm had been called into being. The uncovering of these ruins, exposed the remains of the ancient baths. The warmed water flowed through cemented channels. By an Isle of Wight paper, we note that another of these old villas has been unearthed, some four miles from the one above referred to. The "puzzle," in the extract given below, could also be explained in all probability, on the theory of the circulation of warm water through a hot-water bath:

"Some new discoveries have been made at Brading which will not only excite much interest, but also become a puzzle to the archæologist. The first is a large square mass of masonry about four yards on each side. In the center is a square depression, the bottom of which is paved with a large flag. The walls enclosing it are over three feet thick. At the bottom of the wall are spouts, evidently for the purpose of letting off some liquid. The most probable suggestion is that it is a cochlea, or press, but whether used as a clothes press or an oil press is doubtful. Near this is a curious structure, one part composed of a long narrow enclosure, while another at right angles to it forms a kind of circular enclosure. What was the purpose of this it is impossible to say. At the other end of the villa there has been laid bare a square room with a circular base of masonry in the center. This base may be that of a nymphceum, which was used in elegant houses for placing plants, shrubs, and flowers upon. This part of the villa may have been the entrance."

THE HISTORY OF THE AMARYLLIS.—In the *Botanical Magazine* it was an Amaryllis for a period of about thirty-five years. Then it became a Hippeastrum for a period of forty-five years. But in describing a splendid species, discovered in Peru by Messrs. Veitch and Sons' collector, Mr. Pearce, in June, 1867, Sir J. D. Hooker named it Amaryllis pardina. Having done so, he felt bound to justify the proceeding, and he did so by saying that the differences recognized by Herbert were so slight and variable as to be of no practical value. Therefore the original generic designation was restored; Linnæus triumphed, and Amaryllis is herself again. The introduction of A. pardina opens a new chapter in the history of this flower. Its name implies that it is spotted like the leopard, but that quality is not much valued by the florists. It is of more importance to say that this flower is distinguished by great breadth of petal and the absence of a funnel, a fact favorable to the expansion of the flowers to a symmetrical face. More than any of its race introduced up to the year 1867, A. pardina stirred the blood of florists and gave new zest to the labors of the hybridists, who, however, soon discovered that, with all its fine qualities, it is not the model for breeding from that they would themselves have created had they been permitted to assist in the work of the third day as recorded in the Book of Genesis. But the model was ready for all that; like many other desirable things, it was made with the rest on the third day and remained to be discovered. This was secured in Peru by Mr. Pearce. It appears that the King of the Belgians, one of the most generous and enlightened patrons of horticulture in this flowery world, admired the flower when it was shown at South Kensington in the year 1869, and it was named in honor of his visit Amaryllis Leopoldi. It is as truly the king of the Amaryllises as Lilium auratum is the queen of Lilies. It possesses all the elements of a perfect florist's flower in breadth of petal, depth of color, a sharply defined star, and petals superbly tipped with white or an approximation thereto. It is sufficiently defective as a florists flower to afford work for the hybridist, and excitement to the critics, and to give peculiar interest to the splendid series of varieties that, chiefly by its aid, have been raised by Messrs. Veitch & Sons, of Chelsea. The hybrids figured in the year 1865 in Van Houtte's "Flore des Serres" were, in a way, wonders of their time, but we have got far beyond the flowers with funnels and indefinite green stains, and look for expanded flowers of the most perfect symmetry both of form and color, and with novel markings

to give the charm of variety to collections.—*Garden.*

HISTORY OF THE GRAPE.—In a review of Mr. Barron's recent book on the grape, the *Gardeners' Chronicle* says: "In the first chapter we have an historical sketch, which we should prefer to have dispensed with. It would be rather difficult to establish that 'Juno's crown was made of the vine,' in view of the fact that the existence of Juno herself is open to question! We should deprecate any discussion upon such a point, which is not of a practical character, but if the history had to be gone into at all, it might as well have been stated that by far the earliest records of the vine are the fossil imprints of Montpellier and those of Provence, both of unknown date, but in any case long prior to any human record, Egyptian or otherwise, mentioned by the author. The Swiss and Italian lake-dwellers also knew the vine in the Bronze Age, but no one knows precisely when that age was. Mr. Barron tells us that Syria 'would appear' to be the native country of the vine, and that is possible, but no evidence is given in support of the assumption, while the balance of authority, as summed up by De Candolle in his 'Origine des Plantes Cultivées,' recently noticed in our columns, points rather to the south of the Caucasus and the adjacent region between the Black and the Caspian Seas as the home of the vine. Before this question can be settled however, we shall have to be sure about a matter on which Mr. Barron is silent. What was the origin of our cultivated vines? Do all our European and Western Asiatic vines (for we may safely exclude the American species and numerous other species from the Eastern tropics) proceed from one species—that which we now call V. vinifera—or have two or more species concurred in developing that now very artificial product, the cultivated vine? In the Caucasus there is one species and two varieties, from which—we are speaking on the strength of information collected by De Candolle—the numerous varieties cultivated in Armenia have evidently sprung. Regel, however, leans to the opinion that our cultivated Vine is a hybrid between V. labrusca and V. vulpina, both natives of North America, the Himalayas, Japan, and China; and if variability in the offspring is any test, the hybrid origin would in so far be strengthened, but in any case, in the case of a plant cultivated for so long a period over so large an area, there has been both time and opportunity for plenty of variation even without cross-breeding. The total number of varieties described from all countries is estimated at about 2,000, but in this country the number grown is relatively very small. Mr. Barron gives some interesting figures relating to this point—he tells us that in 1768, eighteen sorts were described by Miller, in 1791, Speechly recorded fifty, in 1810, Forsyth mentioned fifty-three. The catalogue of the Horticultural Society in 1831, drawn up by Robert Thompson, contained 182 names (that of 1842, which we have not at hand, is said by Darwin to have comprised ninety-nine varieties), while Hogg's *Fruit Manual* of 1875 contains descriptions of 143. Mr. Barron himself enumerated 100, but he purposely omits mention of many inferior varieties."

CINCHONAS IN THE CAPE DE VERD ISLANDS.—Professor Henriquez, alluding to M. Van Gorkom's recently published treatise on Cinchonas (see p. 84), informs us that in the Cape de Verd Islands, especially at St. Antao, and at St. Thomé, where there are already thousands of plants of C. succirubra, officinalis and Ledgeriana, analyses have been made of the bark of some of these species, and with most satisfactory results. Most of these plants were sent from the Botanic Garden at Coimbra, whence seeds were also sent. The plants have been multiplied by cuttings.—*Gardener's Chron.*

COMMENCEMENT OF CULTIVATION.—The *Gardeners' Chronicle* says: "Of the actual commencement of cultivation on a large scale little or nothing is known. A Fig is represented in the pyramids of Ghizeh, which have an antiquity estimated by various writers at a period varying from 1,500 to 4,200 years before the Christian era. In China, 2,700 years before Christ, religious ceremonies were instituted in connection with agricultural pursuits. But these dates, even if trustworthy, evidently do not go back far enough. China, south-west Asia (with Egypt), and tropical America, are the three principal regions in which the cultivation of leading agricultural plants originated, and from which it spread."

A TERTIO-MILLENNIAL.—Philadelphia has just had its Bi-Centennial, but we have older cities now. Santa Fè is about to hold its 250th birthday. The New Mexicans intend to have a grand time over it. There will be a great exposition interspersed with all sorts of fun and frolic, extending from July 2nd to August 3rd. Truly we are becoming something more than a young country when these things are.

MR. H. H. RUSHY.—This energetic botanical collector is again in the South. Early in May he had reached Fort Whipple, in Arizona.

W. G. BURK.—Death has been busy of late among the correspondents of the GARDENERS' MONTHLY. We have still another loss to deplore. Under the signature of B. or W. G. B., we have had many an interesting sketch from the pen of W. G. Burk, of Media, Pa. He was born in Delaware Co., Pa., in January, 1804, near where he died on the 28th of April last. He was by turns school-master, physician, druggist, and finally retired to a farm twenty years ago. He was fond of horticulture and most of the Natural Sciences, and especially devoted to botanical pursuits, a taste he possessed in common with his brother Isaac, well known for his devotion to the building of the famous herbarium of the Academy of Natural Sciences of Philadelphia.

NORTH AMERICAN MOSSES.—It is gratifying to know that the life-work of the late Professor Thos. P. James is not to be thrown away. The *Manual of North American Mosses*, by Lesquereux and James is already announced as on the press.

SYSTEMATIC CENSUS OF AUSTRALIAN PLANTS. —By Baron Ferdinand Von Mueller. Part 1st, Vasculares. Issued by the Government of Victoria at Melbourne.

Bentham's Flora of Australia, is now the standdard work on Australian plants. But as in so many cases, the growth of knowledge has produced a great number of new species, not known when the earlier volumes were being prepared, and a new volume as a supplement might be issued. This, however, is a work of great magnitude, and it may be some years before it is completed. Baron Mueller, whose work did so much to make the Flora of Australia possible, may give this supplement at some time; and in the meantime he gives this list, which is an excellent substitute; for he not only gives the names of everything known to 1882, but references to the works in which they were originally described. By this those who are studying Australian plants in the vicinity of good libraries, can identify those not included in the main work.

American scientific men are accustomed to hard labor, and get through with an immense amount of solid work. But with all this familiarity with intelligent industry it is yet a marvel how Dr. Mueller accomplishes so much.

INSECTS INJURIOUS TO FRUITS. — By Wm. Saunders, of London, Ontario. Philadelphia, published by J. B. Lippincott & Co., 1883.

It was with much pleasure that we announced the preparation of this work some months ago, because from the peculiar studies of the author, we were led to expect a work of unusual excellence. It is not often that scientific eminence and practical knowledge of horticultural topics are so eminently united in one man, and this union of advantages could not but tell in the production of a work like this. Now that it has actually appeared it is an additional pleasure to find the anticipations more than fulfilled, and we are sure the fruit grower will feel that it is one of the most valuable works that ever appeared on his library shelves. Every insect known to have an injurious influence is treated of, both in scientific and popular language, and insect remedies noted wherever they are positively ascertained. Besides this they are introduced to us by excellent figures of the insects themselves, so that each can be readily identified. Besides the intelligent and complete manner in which the subject is handled, the publisher deserves praise. Though the work contains 436 pages and has 440 wood cuts, and the paper and printing of first-class character, it is issued at only $3, which we think remarkable.

We note that the entomologists seem to have as much trouble with the popular names as botanists have, and the solution seems to us about as unsatisfactory. Mr. Saunders finds popular names not very numerous, but he endeavors to start them by translations of the scientific names. If the object of popular names is to have something easier than the technical ones, mere translations seem no easier. Turning at random over the leaves, we cannot for instance, think that "white lined Dielephila" any easier than Dielephila lineata. Mr. Saunders, however, wisely compromises. He gives the people the specific name only for common use, reserving the generic for the use of the more scientific. To try to make the whole name common—to have, say, "The white-lined lover of the 'Diel,'" would certainly be too much of a good thing for even the most voracious feeder on popular names. The subject is an exceedingly difficult one to handle. Every body admits the value of popular names for the popular vocabulary, but just how to get at them in any satisfactory way, or to keep them in satisfactory shape after they have been started, is the great trouble.

THE BEE-KEEPERS' MANUAL.—By Professor A. J. Cook, Lansing, Mich. Published by the author.

A little boy remarked to the writer of this not long ago, that he thought the poor bee had a hard time of it, working from daylight to dark as hard

as could be with no time for play! It does seem a hard life, yet if the bee could only spare a moment to think, it might have some satisfaction in knowing that it made other people work as well as itself. At least Professor Cook has to work. Only think of a book of this kind going through ten editions since 1876. Professor Cook has worked hard to keep abreast of all knowledge on bee-keeping. It is no wonder the book sells so well.

FORESTRY. — *The Journal of Forestry* has changed its title to simply *Forestry*, a commendable reform. Long names are abominable, especially to the hard worked editor, who is always anxious to give full credit to an exchange. Mr. Francis George Heath has become its editor, though its publishers still continue to be William Rider & Son, London. Forest culture, as usually treated,is a dry subject; but treated as *Forestry* treats it becomes as juicy and enjoyable as a plate of strawberries smothered in cream.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

THE ENGLISH SPARROW—"CROW-FOOT."—What is the latest conclusion in regard to the English sparrow? Is it a grain eater, or an insectivorous bird? As a few of them have appeared in our vicinity, I am the more anxious to make up my mind concerning this bird."

[We have only to repeat what we have said before, that modern ornithology shows few, if any, birds are either strictly graminivorous or strictly insectivorous. Take for instance the common yellow bird, one of the worst depredators on seeds in the summer time, feeds wholly on small insects in the early part of the season. The various kinds of aphis are especially welcome to the yellow bird in spring time. The English sparrow is no exception. It will eat anything whatever that is most conveniently at hand. It does not propose to starve when there are few insects to be had, and it rejoices on a flesh diet when seeds are scarce. You can form your own conclusions from these facts. It increases very rapidly. If it gets in your grain fields and among your fruits, the facts may endanger your reputation as a meek and mild mannered man. There is however always this consolation, that no bird can live out in our northern climate, when the ground is covered for weeks with snow. So the English sparrow must keep to the large towns for protection. It has been of immense use in some towns. American birds are too shy. They avoid close contact with humanity. The English sparrow remains among men. This is its only advantage. It will aid in clearing out insects from cities, when other birds will not. But it will do damage as well as be useful; and just which of the two it will prove must depend on each person's experience. Every person should be left free to protect, or to encourage it as he may see fit.—Ed. G. M.]

FRAUDS.—Mr. A. Dohles, Waterloo, New York, writes: "This morning I was visited by a man who represented himself to be a writer for the GARDENERS' MONTHLY. He sat down in my room, wrote a lengthy article on my business, and after he had finished he offered me as many copies as I wished for ten cents a copy, which would have the article in it which he wrote up. He also offered me the magazine for one year for only one dollar. As the individual looked very doubtful, I required of him a certificate from you, which he could not show; therefore I declined his kind offer, and told him I would pay on receipt of the papers. If I am not very much mistaken he is a mis-representative of your journal, and collects funds under false pretences. He came from Auburn and, I think, is traveling West to try his profession. I should like to hear from you about this matter, as I think he ought to be stopped if he does crooked business.

[The publisher has sent his thanks directly to Mr. Dohles, and we publish the letter for the benefit of others. There is one rule which no one should ever forget, namely, though a publisher or a nurseryman, or a business man of any kind may send out canvassers for names, or orders, he never expects any person to pay money to a stranger, or indeed to any one, stranger or not, before he has the goods. Any unknown fellow therefore, who goes tramping around the country and asks money before the goods are delivered, is invariably a fraud. The only matter of surprise is that people should be found willing to pay money to any stranger before they have the goods. We are unable to help any one who does such things as these.—Ed. G. M.]

HORTICULTURAL SOCIETIES.

COMMUNICATIONS.

A CONVENTION OF CALIFORNIA GRAPE GROWERS.

BY CHARLES H. SHINN.

A few weeks ago three hundred viticulturists of Napa County, California, met in Napa city, and held a convention that seems to have been highly interesting. They first discussed preparation of the ground, proper soil, &c. The hillsides were preferred by many, and the northern exposures often produced the best grapes. Among the varieties of wine-grapes recommended were those of the Rhenish, Burgundy, Medoc and Sauterne districts, including the Pinots Reislings, Verdor, Sanvignon, Mallec, Semilon, &c. The Petit Pintor was excellent. The Mattereaux was hardy and made a good claret. The Lenoir was desirable for its coloring qualities. The Black Burgundy, Black Reisling and Chabronet are choice wines. There was a great deal of talk among the members on the subject of table-grapes, for shipment East. Last year table-grapes of the best quality brought $50 or $60 per ton, while wine grapes were only $25 or $30. The flame colored Tokay, and the Black Morocco were good shipping varieties. The white Tokay, and the Emperor were great favorites for this purpose. Among early grapes, the white St. Peter is notable. One gentleman reported obtaining eight tons to the acre from the second crop of this variety—and probably twelve tons from the first crop. His vineyard is on the richest of soil, and is highly stimulated with bone dust and other fertilizers. The most important piece of work the convention did was to take up the subject of "unequal and unjust freights" on their wine. The grape-growers and wine-makers of the State say they are charged too much to carry their products to market. The attempt is being made to organize a union throughout California, to petition Congress, and to take proper legal steps to ascertain the rights of shippers.

Reports so far received, from various parts of California show that the viticultural industry is being organized in almost every county where vineyards thrive, and the local societies prosper, as a rule. The Riverside horticultural society, and those of Pasadena, Pomona and other points in the southern counties often discuss raisin-making, as well as the wine industry. The centers of the latter, in the South, are at Los Angeles and in San Gabriel valley. There is no wine, to speak of, made at Riverside or Pasadena. Anaheim is the wine colony, par excellence, of the southern counties. Napa county is the wine region of the central region, as Los Angeles is of the south.

EDITORIAL NOTES.

PENNSYLVANIA HORTICULTURAL SOCIETY.—The Fifty-fourth Annual Exhibition will be held at Horticultural Hall, Broad Street, above Spruce, in connection with the nineteenth biennial session of the American Pomological Society, to open on Tuesday, September 11th, at 8 P. M., and continue on Wednesday, Thursday and Friday, 12th, 13th, and 14th, 1883, from 10 A. M. to 10 P. M. All contributions to be entered on or before Tuesday, September 4th.

AMERICAN POMOLOGICAL SOCIETY. — Essays to be read at the meeting in Philadelphia, on September 12th to 14th. The following named gentlemen (the list is alphabetically arranged) will prepare papers:—Hon. P. J. Berckmans, President of the Georgia Horticultural Society; Prof. T. J. Burrill, Illinois Industrial University, on Diseases of Plants; Prof. J. L. Budd, Iowa Agricultural College, on Experimental Horticulture west of the Lakes; Col. N. J. Colman, Editor of the *Rural World*, Missouri, on Utilizing our Fruits; Prof. J. Henry Comstock, Cornell University, on Insects of the Orchard; Dr. W. G. Farlow, Professor of Cryptogamic Botany, Harvard University, on Uredineæ (rusts and mildews); Charles A. Green, Editor of the *Fruit Grower*, on Certainties and Uncertainties; Samuel Hape, Esq., Atlanta, Geo., on the Effect of the Evening Sun on Fruit Trees; Byron D. Halsted, D. Sc., Editor of the *American Agriculturist*, on Fungi; Josiah Hoopes, Ex-President of Fruit Growers' Society of Pennsylvania, on Peach Culture in Pennsylvania; Prof. W. R. Lanzenby, Ohio State University, on Dichogomy in Cultivated Plants; *i. e.*, noting examples where the stamens of a flower mature before the stigmas, or the stigmas before the stamens; Hon. T. T. Lyon, President Michigan State Horticultural Society, on How can we best maintain a high standard of quality in fruits, as against the tendencies of commercial pomology; J. C. Plumb, Milton, Wisconsin; Prof. C. V. Riley, U. S. Entomologist, on Recent advances in Horticultural Entomology; Dr. E. Lewis Sturtevant, Director of the New York Experiment Station, on Some things the Station can do for Horticulture; Prof. S. M. Tracy, Missouri University, Secretary of the Mississippi Valley Horticultural Society.

THE

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AND

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FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

TROPÆOLUM CANARIENSIS.

BY MRS. M. D. WELLCOME.

Your contributor who writes so interestingly "Among the Flowers," refers to the above plant, better known as the Canary Bird flower. I am surprised to find him saying, "I have not seen one of them in thirty-five years."

I wish I could show him mine, and he would not talk of them as being "three and four feet high, clover-like." It has for several years been a favorite climber with me, and I would not be at all satisfied if I did not have at least eight or ten of them. They grow from ten to eighteen feet in one season from seed sown in May. I have them trained on strings around a very tall cherry tree, which does not have low nor large branches. When they have climbed to the boughs they run out on them in every direction, and with their handsome light green laciniated foliage and lemon-colored bird-like flowers, borne in great profusion, they are a charming sight. Last summer I planted a Cobœa scandens with them, and the intermingling of the yellow blossoms with the green and purple bells was "just lovely." So pleased was I with the effect that I have the same arrangement this season. They begin to bloom in June and continue until sharp frosts.

A writer in *Vick's Magazine*, 1879, writes enthusiastically of a sight he had of them when on a visit to Alnwick Castle, in the north of England. "The first thing that struck me on entering the town was a bay window most charmingly draped with beautiful light green climbers and literally covered with bright lemon-yellow flowers. Now this appeared so strange to me—for the chilly night air had already affected the geranium and other tender outdoor plants—that I had to cross the street, take the Yankee liberty to open the gate, go inside and examine the thrifty beauty. I confess I was not only surprised but greatly interested to find it was only the Canary flower, Tropæolum peregrinum, a member of the Nasturtium family, and I concluded at once that there should be one cottage in America next summer worth coming miles to see on account of its climbing plants of light green foliage and rich yellow masses of Canary bird flower. This beautiful plant is an annual, and in some of the seed farms near London whole acres of it are raised for seed; the plants are trained on long trellises, and in the blooming season the display is simply gorgeous."

In the various periodicals to which I contribute flower articles, I have called attention to this charming climber and urged its cultivation, and although too late for this season we do hope you will make a note of it and include a packet in your seed order next spring.

I would also recommend Tropæolum Lobbianum as a very attractive climber. They differ materially from the common running Nasturtium. They will grow from ten to twenty feet in height.

T. L. Coleur de Bismark is brown; Geant des Batailles, carmine; Roi des Noirs, black; Von Moltke, bright bluish rose.

THE EGLANTINE ROSE.

BY MRS. D. W., OF SUMMERVILLE, S. C.

The Eglantine Rose, so often mentioned in our American botanical works, appears to be different from what I remember it in England and France over forty years ago.

The Eglantine, "L'Eglantinier," has small bright dark green foliage, is a running rose—or can be made so. It bears single purely white flowers (the petals rather thick), with quantities of bright yellow stamens. The fragrance of the flower is deliciously faint and sweet, while the Dog Rose, of Europe and of our own land, bears pink blossoms, some pale, some deeply colored, the largest and most brilliant I ever saw being those of Nova Scotia and Canada. The foliage is paler than that of the Eglantine, and scentless; the flower of much finer texture, and the fragrance entirely unlike the Eglantine.

The Sweet Briar, so common in Europe and so beloved by peer and peasant, bears a small insignificant pink rose, while its rough foliage, full of thorns, is valued for its fresh, pungent fragrance, retained even long after being dried. The Sweet Briar grows to be a tall, wide-spreading bush; in the summer perfectly covered with its tiny blossoms.

Again, with regard to the Eglantine, I have a vivid recollection of an Eglantine growing luxuriantly over a building on my father's estate in England, which was always known by that name, and the white flowers eagerly culled for their pleasant peculiar fragrance.

UNWORTHY NOVELTIES.

BY VIRGINIAN, WALKERTON, VA.

Permit a stranger heartily to thank Mrs. R. B. Edson for her "Random Jottings" in the May number of the MONTHLY, and especially for her last paragraph. Surely people have been long enough humbugged with the wonderful Hydrangea paniculata grandiflora. Like many others, I too invested half a dollar in a little plant some years ago. It grew and bloomed abundantly. For a while the "head" was of a pale green, then for two or three weeks white, and in that condition nearly as good as the old-fashioned Snow Ball, but soon changed to a dull, dingy, dirty pink, a disgrace to the lawn.

In moving my residence I left that behind. It was one of the few plants I had no wish to take with me. I can find no one here who thinks it nearly as good as the old Snow Ball.

I see still freely advertised another plant of which I bought a specimen some years ago, and threw away after blooming it—the Tritoma, sometimes called Red-hot Poker plant. Please let me say, if any one wants a stiff, ungraceful, coarse, glaring, vulgar-looking thing, let him get the Tritoma; it will fill the bill.

There are so many plants and flowers of charming gracefulness and exquisite beauty, why should we spend our money and give our space for things that, to say the least, are far inferior to hundreds of others?

THE PERILS OF BEE-KEEPING.

BY A VICTIM.

I am led sometimes to doubt whether the poetical parson, Dr. Watts, knew as much as he might have done about entomology, or as much as he ought about botany, when he exclaimed,

> "How doth the little busy bee
> Improve each shining hour,
> And gather honey all the day
> From every opening flower."

My good neighbors, the observant Mr. Bumbles and the somewhat sceptical Bodgers, coincide with me, and say "the learned D.D., was mistaken about 'every opening flower.' 'Stramonium!' whispers Bumbles. 'Aconitum!' mutters Bodgers. Rank poisons, both of them, which bees never touch."

Alas! how often does the apiaryphobist dip his pen in the viscid secretions found in the honeycomb and write sweet effusions about "The ambrosial hive," &c. While the nectar is on his lips he becomes wonderfully loquacious, and with a zeal worthy a better cause discourses much about the merits of his beloved bee pets. But "the gay deceiver" says not a word about "the dirks beneath their doublets." "Smooth in speech; persuasive;" beware of the honey-mouthed man, and, like "the deceits of the world, the flesh and the devil," shun him. Remember, too, that in the cup we daily drink most of us find as much wormwood and gall as sugar and honey.

> "'Twas in the pleasant month of May,
> When bees from flower to flower did hum,"

and flit through the blooming fields and gardens of "Merrie England," as they are wont to do. It was there the writer was sadly bee-deviled, some years ago. Then, and there, I had charge of a "lordly place," where good gardening was well carried out and duly appreciated. The noble proprietor and his gentle lady, living in luxury and ease, lacked but one additional pleasure to make them the happiest of earthly mortals. Satiated with every indulgence wealth or power could command, and sighing for novelties unknown, the new delight, the bliss untasted, the crowning joy, so eagerly sought for, was at last discovered—to be an apiary. Unhappy delusion! But no matter; their hearts were set upon keeping bees. So, to complete the sum-total of terrestrial enjoyments, began the horrid business.

Both "my Lord and my Lady" evinced an equal enthusiasm for every branch of natural history, as the various and curious denizens about the park amply testified. But hitherto they had not experienced the delights of bee-keeping. So it was decided they would, and they did so.

Books on the subject were consulted, such as "Baxter on Bees," (I only wish the bees had been on Baxter) "The Apiarian's Guide," (a treacherous guide he proved) "The History and Management of Bees," &c. In fact, all that could be learned from bee maniacs about the bee business was eagerly sought for. Inquiries were made of old Bellows, the village blacksmith, and Mr. Whopstraw, the thatcher, who were supposed to "know a thing or two" about bees. The wiseacres both declared "it would be the best thing his lordship could possibly do." Their wisdom no one could gainsay. The sages' pronunciamento settled all doubts (but my own) and convinced everybody (but the writer).

A rustic structure was soon in progress, and when completed and stocked with a number of hives, was known as the bee-house or apiary; a misnomer for "Inferno," as the sequel will show.

For a time all went on well; the bees seemed to flourish and so did I. As a bee purveyor I flattered myself that I succeeded admirably. Almost everything in the vegetable kingdom, from buckwheat to borage, was cultivated for their special use and pleasure. The first flowers, if not the first fruits of the season were for them. If they could but find an opening into any hothouse or other glass structure where beautiful exotics were blooming, fuchsias especially, they seemed to delight in entering and destroying them. Whether it was from wanting honey or from wanton wickedness I cannot say. But it seemed more like malicious mischief, from the wilful way they beat, buzzed and banged about the flowers than anything else.

Summer and autumn passed by, and at length frost and snow put an end to their revels outside, and the shrill wintry winds blew gusty and chill.

Then the two bee oracles, Messrs. Whopstraw and Bellows, conjointly advised that they, the bees, should receive a daily allowance of sugar and old ale during the winter months. They assured me "it would warm the blood in their little hearts and would cause them to love me more than anything else; and would, moreover, be the making of them by springtime." The two savants had considerately put me in possession of a talisman that would protect me from every bane and evil that might lurk in the hearts of bees. Following their advice (I will vouch for it), no bacchanalians feasted or fared better than they.

They must have had a jolly time of it. I have often wondered since if it was possible for little bees to get drunk and kick up a fuss, or play the fool, after the manner of big bipeds. I am inclined to think so, and can only attribute some of their strange vagaries to alcoholic excitement or delirium tremens.

The rigors of the winter season passed by and gentle spring was ushered in, with March winds and April showers. May, smiling May, had come again and was lovingly opening the sweetest flowers, and all nature seemed blithe and gay. All hands in the gardens and grounds were busy, as the slanting rays of the morning sun shone through the apiary and warmed and wakened the little workers within.

Fain would I conceal what follows and "tell it not in Gath." But a duty I owe to my fellow-creatures urges me to dispel all apiarian dissimulations I can and burst the bee bubble. The old and fraudulent "South Sea bubble" was not more fallacious than the modern bee fanciers' delusions.

While directing some operations in the rosary, between the aviary and apiary, and adjacent to the mansion, I heard the dulcet notes of a lady fair, accompanied by a harp, sing softly the song "When the bee sips her sweets from the lip of a flower." Fascinated with the seraphic melody of the enchantress I paused, and while listening to the voice of the charmer observed at my feet a struggle between three belligerent bees. The combat seemed unequal, two to one. As a lover of fair play my sympathies went to the weakest side as they always do, and dire was the consequence.

With good intent, be it said, I separated them and thought no more about it. Two of them flew straight to the hive, and the other took wing in an opposite direction. Soon after, in the neighborhood of the hives, was heard a strange buzzing and a noisy commotion within. There was mischief brewing. Presently a score or more flew in my face, singing "Business, business, mind your own business," and viciously stung me. Like skirmishers in the front, they were closely followed by an army of some thousands of infuriated foes, who spitefully charged upon me from all sides, like a legion of devils. Maddened with the venom of their poisoned weapons, I fought the noxious tormentors off as best I could, and yelling with pain made off for home as fast as I could run. Although I had but a short distance to go, I could scarcely see my way in at the door. If "our soldiers swore terribly in Flanders," perhaps they were justified. And if at any time justifiable swearing is admissible, I think it is when ten thousand fiendish bees assail us, and there seems to be no other way of overcoming their atrocious and diabolical designs. I am not an adept in the art of war, and to a knowledge of military science I lay no claim. I confess to knowing more about plowshares and pruning-hooks than swords and spears.

The infernal furies drove me as near to the dividing line of the valley and shadow of death as I have ever been before or since. No professional bruiser's eyes were more effectually bunged up than mine. Neither were the features of anything living so shockingly deformed or frightfully distorted. Talk about "the human face divine," my own neither looked human nor divine. For the time being I was a marked man, if not "a man of mark." And was, moreover, distinguished by being the only one of the kind in the universe. Certainly, no homogeneous being bore any resemblance to me. My friends failed to recognize me, and even my dog, the hitherto faithful "Toby," disowned me.

If Job had been my name, I, perchance, might have borne the affliction patiently and felt thankful under the circumstances. But no Jewish virtues possessed me then. My name was William, an Anglo-Saxon, and I suffered accordingly. The combined medical skill of Doctors Drastic, Bolus and Bleedem, coupled with a sound constitution, saved me; and a merciful Providence has spared me to make known the perils of bee-keeping. Having accomplished the pious duty assigned me of informing my fellow-creatures of the evil that befel me (as a warning to others), when "Pandora's box" was opened and a legion of bee-devils flew out and encompassed me round about—must conclude.

As my mission is now ended, and it only remains for me to say that whenever I see "the little busy bee," it reminds me of Hamlet's words, "He poisons him i' the garden."

BEE—An insect that makes honey and wax, says Worcester.

BEE—An insect that makes me flee away, says

W. T. HARDING.

EDITORIAL NOTES.

ROSE SIDONIE.—The French *Journal des Roses* does not wholly devote itself to new roses. In the October number it gives a colored plate of the beautiful old hybrid perpetual Sidonie, which to-day is not surpassed by any new one, when we take into consideration a number of good points. It is especially interesting as being the parent of the whole race of hybrid perpetuals. It was raised, in 1820, from an English hybrid China rose, named as the Portland, or Portland Damask, a hybrid with the Rosa Indica and Rosa gallica. The raiser of Sidonie was a Mons. Godefroy, florist of Ville d'Avry in France.

JAPAN MAPLES.—A report of the Massachusetts Horticultural Society says: "Mr. Strong mentioned first the Japanese maples of the polymorphum type, which may be properly classed as shrubs. There can be but one opinion as to the exceeding beauty of many of them. The variety known as atro-sanguineum purpureum is perhaps the best for our climate. But it is greatly to be feared that none of these are likely to prove vigorous, though it is probable they will withstand our winters if they mature a healthy summer growth. The difficulty is with our hot suns. On the estate of Mr. Hunnewell, where they have the benefit of shelter and moisture, they seem to thrive, and are superlatively beautiful. But at Messrs. Parsons' nursery in Flushing, where they have been largely propagated, they do not get from the frames to the open ground to any extent. The general experience is that they will require such careful nursing as will unfit them for ordinary cultivation." We quite agree with the estimate placed on the atro-purpureum, or atro-sanguineum, as it seems to be indifferently called. Most of these maples are curious, but this one has the germs of the widest popularity.

As to hardiness, the tenderness noted at Flush-

ing we should regard as due to local or temporary causes. The writer has an atro-purpureum before him as he writes, which is approaching six feet high; and while some things supposed generally hardy have been killed, some in one winter, some in others, this plant has never shown any injury. It is on its own roots—not grafted—though we do not know this should make any difference. The purple English oak, growing twenty feet from it, has been killed, when the maple was uninjured.

IMPROVED HEPATICAS.—We have occasionally referred to these as among the most desirable of our spring flowers, and they bear cultivation very well. There are several shades of color, and some with double flowers, mostly from plants that have been found wild. From the following from a correspondent of the *Garden*, it would seem as if there were to be some earnest attempts by florists at their improvement. Perhaps our own gardeners will like to share in this interesting effort:

"These are plants that will repay the trouble of raising them from seed, as thereby a great variety of color is gained, and we shall soon find multiplied the terrific names given in catalogues to these first glances of the spring. The seed does not germinate till the following spring, but it should be sown when ripe. I have now several pans full of seedlings, which will not bloom till next year, though they were sown in April, 1875; for all that I shall be well repaid, as the flowers were carefully hybridized, and the pans have required little attention after sowing the seed. Turfy loam mixed about half-and-half with cocoanut fibre is the best compost for sowing all such seed as will have to remain a long time in the pans; this compost does not become sour or consolidated."

PANSIES FOR BEDDING.—My neighbor, Mr. Beard, an enthusiastic horticulturist, grows the finest pansies that I have ever seen. A few months ago the Massachusetts Horticultural Society awarded him a silver medal for his pansies. He sows his seed in August, and grows his young plants in cold frames, which are well wrapped up in winter by a bank of litter with a board over it around the frames, and straw mats with light wooden shutters over them, over the sashes. His pansies keep growing all winter long, begin to bloom in January or February, are at their best in March and April, and by a little shading from strong sunshine, and lots of water should they need it, they bear their blossoms copiously till June arrives, by which time their blossoms, on account of the excessive heat, become too small to satisfy his taste, then every plant is rooted out and thrown away. The soil he uses is fresh loam, with a heavy addition of old rotted manure and leaf mould. Last spring, in front of his house, in addition to his beds of spring flowers, were vases filled with pansies of a size and richness so uncommon as to elicit the admiration of the whole neighborhood, and sow the healthy seeds of emulation. For two months before the advent of geraniums and petunias we can thus enjoy our pansies. Connoisseurs sometimes perpetuate the finer pansies by renewing them from cuttings every year, but so very fine is the Lemoine strain, that pansies from cuttings seem a waste of time.—*W. Falconer in Country Gentleman.*

ZEBRA GRASS.—Eulalia Japonica is not far inferior in beauty to the famed Pampas grass, and especially when growing in good strong bunches. As an ornamental parlor grass it is particularly desirable. Besides it has the advantage of being entirely hardy.

A WHITE DAPHNE GWENKA.—In regard to the discovery of the white variety of this in China, Mr. Maries tells the *Garden:*

"As I left Kuikiang and rambled along amongst the old graves and bushes on the roadside I noticed several light-colored varieties of the Daphne Gwenka. It struck me there might be a white one, and I was somehow always looking for a white variety. When near the hills I saw in the distance, across the paddy fields, a white patch of flowers. I went, and found to my inexpressible delight a pure white variety of the Daphne, with much larger flowers than the lilac one, and slightly scented. I took up the plant carefully, and sent to Kuikiang for pots and potted it. It grew, and was eventually safely landed at Coombe Wood Nursery, where it thrives well. It was growing in stiff yellow loam; in fact, I never found Daphne Gwenka in anything else except loass and stiff yellow loam. It thrives admirably in gravel at Coombe Wood. The best way to grow it is to prune it down after flowering, so as to get long young growths, on which the flowers are produced the following spring from the ground to the top of the branches. I have seen it four feet long in China, just as Mr. Van Volxem described it to me —a 'grappe des fleurs.' The white variety is evidently a rarity, as the Chinese said they never saw a white one before."

ROSA RUGOSA.—For many years Rosa Kamtchatica has been growing in old Germantown gardens. The newly introduced Rosa rugosa seems to be the same thing, and as far as we can judge from Lindley's monograph of roses, the described differences have little specific value.

CULTIVATING THE JAPAN LILY.—It is well known that of thousands of Japan lilies planted in this country annually few survive. The true reason has not been discovered. It has been thought that

there was some delicacy of constitution; but perhaps the true state of the case has been offered in the following, which we take from an address by Mr. W. E. Endicott before the Massachusetts Horticultural Society:

"It is well known to possess a delicacy of constitution, owing to which the bulbs, after flowering pretty well for a year or two, dwindle and die. The essayist said he had planted great numbers in all soils and positions, but all have gone the same way, except a lot of six planted ten years ago in ordinary garden soil. All but two are in good condition; one of these had the shoot knocked off by a careless person, and the bulb of the other was pierced by the underground shoot of a plant of Arundo Donax. This imperfect success the essayist ascribed to the fact that the bulbs were originally planted twelve or fifteen inches below the surface of the soil, and he has come to the conclusion that all lilies should be planted deep rather than shallow. To get a sound, strong stock of Lilium auratum, they should be raised from seed here. This has been found true in England, where such sell for from one-quarter to one-half more than imported bulbs. It is beneficial to this and other species to provide at least a partial shelter for the lower half of the stem. A remarkable point about the L. auratum is the variability in the time of flowering, which ranges from June to September, and, stranger still, the plant which flowers early one year will bloom later the next."

SCRAPS AND QUERIES.

PLANTS FOR NAMES.—A box by mail, marked from H. Webber, Cumberland, Maryland, came to hand, and contained specimens of two native plants, Castilleja coccinea and Cypripedium acaule. No letter has been received referring to them, but we suppose them sent for names.

CLEMATIS FOR BEDDING.—A. L. Siler, Hillsdale, Utah, writes: "You may say to your Canadian correspondent that Clematis montana is the plant that he wants for a bedding plant; it is not a climber but a trailing plant, with large purple flowers, produced in May and June. It prefers a rocky or gravely poor soil, and grows when it gets but little moisture. It is hardier than the oak, and is the plant that a Canadian would naturally want. Clematis Douglasii might give him some satisfaction, but it is a herbacious perennial. Say to A. B. C., of Bucyrus, Ohio, that seed of any of the plants named in his inquiry in the April number will grow if scattered on the ground in the fall of the year."

JAPAN MAPLES.—E. Manning, near Harrisburgh, Franklin Co., Ohio, writes: "What is your opinion of the new Japan maples; do they generally succeed or not in latitudes like central Ohio? My own experience of eight varieties of them is anything but favorable. I have only one left, and I think it will soon go the way of the rest."

[We can only say that, excepting our correspondent's, we have received no complaints that the Japan maples do not thrive in his latitude. They thrive exceedingly well in Philadelphia, growing rapidly, and standing both heat and cold without the least injury.—Ed. G. M.]

SEEDLING CLEMATIS.—D. Smith, Newburgh, N. Y., writes: "By post I this day send you a few flowers of my seedling Clematis, Mary, which I raised three years ago, and which I consider a decided acquisition. Plant, perfectly hardy—none of the Clematis family more so—an excellent bloomer. The flowers, it is believed, equal in beauty, size, etc,, either of the early blooming varieties, standing well the rays of the sun, etc. Supposed to be a seedling from the Sophia, but of a darker color and firmer texture; perhaps accidentally crossed by some other variety. If the flowers are received in good condition, would like your opinion of it. I have no plants for sale."

[The flowers came in good condition. We would call the seedling a rich violet color, and it is certainly a desirable sort. There are, however, such a variety of Clematises nowadays that it is impossible to say whether or not this one differs from any now known. The well-known sort, azurea grandiflora, approaches it in color, but is lighter, and has narrower petals.—Ed. G. M.]

CERCIS CANADENSIS.—I. S. C., New Jersey, writes: "Inclosed I send you a twig of a tree that is on my grounds and which I do not know the name of. The tree is about fifteen years old, and is about twenty feet high. It is now covered with bloom, and has been for about a week, and will continue so for a week longer. Please give me its name, and can it be propagated by cutting?"

[The specimens are Cercis Canadensis, the American Judas tree. As shown by our correspondent's inquiry this tree is not so generally known as it deserves to be. Given room to develop, it forms a symmetrical tree and seldom fails to flower profusely every spring. Cercis Japonica, the Japan Judas, has richer colored flowers, and is a great acquisition. The name Judas tree is a corruption of the French *Arbre de Judée*—Tree of Judea—Cercis Siliquastrum—and, after corrupting the name, the English supposed it to be the "tree whereon Judas did verily hang himself."—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

REMARKS ON STEAM HEATING.

BY CHARLES BURLEY, EXETER, N. H.

I have used steam for two winters in my greenhouses, in place of the hot-water system, which had furnished the heat for the previous twelve years; and if my experience will be a help to those who still doubt, I am disposed to add something to the valuable contributions in your April and May numbers.

I adopted the Exeter Machine Co.'s boiler, for the reason that I knew of its value in heating dwellings, public buildings, &c., in this region, where it meets with unqualified approbation. I am very glad to see that Mr. Evans and Mr. Simpson have found this boiler and the heating by steam as easily understood and managed as I have done, and I am free to say that all who adopt the system of low pressure, with the boiler and plans of piping houses recommended by the experienced workmen of the Exeter Company, will not be disappointed.

The specially valuable point in the sectional boiler is, as Mr. Simpson says, that more sections can be added in case more heat is wanted. Another important feature should be mentioned, and that is, in case of accident from improper management: The sections do not explode, tearing everything to pieces; they simply crack, and you have notice at once by the steam or water oozing out. In such case the cracked section can be removed, the connecting joints plugged, and the heating go on till a new section is ready. With ordinary care, however, such a contingency will not arise, for the sections will never give out if there is sufficient water in the boiler.

My boiler has twenty-four sections, in two batteries of twelve sections each, set over two fire boxes. In moderate weather one fire will make steam fast enough to heat the six houses, equal to 12,000 feet of glass. The second fire is lighted when the weather requires it. It will readily be seen that this plan of two fire boxes is specially valuable in case of accident to the boiler.

Five pounds pressure has proved in my houses to be sufficient to meet the coldest temperature, even at the extreme ends of the houses. Two or three pounds is more often the register of the gauge, and the thermometer in the houses will stand at 60°. I have never been able with hot water pipes to raise the temperature so high in my largest houses at night as with steam at five pounds and less; hence I do not see the need of fifteen to twenty pounds pressure, which appears to be Mr. Bochman's register (see p. 105 of your April issue).

Some of your correspondents advise the use of large pipes. Under high pressure Mr. Bochman's reasons may be good; but for good results in warm, as well as cold winter weather, I would prefer four 1-inch or 1¼-inch pipes to two 2-inch pipes, the cost of putting up being about the same. I think the large pipes objectionable from the fact that the heat cannot be kept low enough in moderate weather. With four lines, instead of two, the temperature is under better control. I have adopted, as a compromise, this plan: A large main of 2-inch pipe runs the entire length of the house, about twelve inches from the ridge, the gradient line being, say ten inches in the hundred feet, downward toward the extreme end, where branches of smaller pipe lead to the coils and manifolds, as shown by Mr. Evans on pages 102-3. (April number, G. M.) These coils have a like gradient downward to the inner end of the house, and hence the return water is flowing freely in all, and finally drops into the main drip and returns to the boiler.

The entire series of pipes must, of course, at the lowest point be some fifteen inches above the water line in the boiler, thus dispensing with automatic traps, &c.

Here we have a large pipe heating the upper part of the house, and a series of three or more small pipes, which are opened or closed as occasion requires, on the sides. The advantage of this system will be apparent to any one who will look into it. I believe the large pipe near the roof does an important part of the heating, and is a test of the idea suggested in the editorial notes of the G. M., page 107. An all-important requisite is good draft. Burning anthracite coal with a sluggish draft is very expensive. We all know that it can be reduced by dampers; but we must not be content with anything short of a strong upward current when occasion requires.

THE MANETTI ROSE.

BY MR. H. B. ELLWANGER, ROCHESTER, N. Y.

I know that the GARDENERS' MONTHLY would never with intention mislead its readers; permit me, therefore, to make some corrections of the statements in your June number on the Manetti rose.

Since the Manetti became known as a desirable stock on which to graft roses our firm has made use of them, importing or growing a considerable quantity each year. This June we will have 55,000 roses in flower that are on Manetti roots, and we have planted out for our July budding upwards of 90,000 Manetti stocks and 10,000 Grifferaie stocks. This is one-third of our entire stock of roses, and will show in what estimation we hold the Manetti.

There are many florists in this State, in New Jersey, Long Island and Massachusetts, who use (for forcing) plants from cuttings, only when budded ones are not to be had. There is a large number of amateur Rosarians who will have their plants, of certain kinds, worked on the Manetti stock, or who will not have them at all.

To say, then, that the use of this stock has been wholly abandoned shows you have been misinformed. The desirableness of its use remains open for discussion, but the fact of its large and continued use is easily proved and is not an open question.

Now, as to the qualities, good and bad, of the Manetti as a foster parent. Horticulturists do not find all desired qualities done up in one parcel; every variety of fruit or flower is lacking in some good feature to be found in another sort. So it is with the Manetti. It does sometimes (often, if you will) throw out suckers from the roots which, if undisturbed, ultimately choke the variety it has been budded with. This is certainly an objectionable feature, but it will not weigh much when placed in the balance and compared with the qualities which commend it for use. By budding roses on a stock like the Manetti or Grifferaie we propagate many varieties which cannot be grown from cuttings, at least not without great loss; such kinds are Baroness Rothschild, Abel Grand, Marguerite de St. Armande, Crested Moss, Gracilis, Persian Yellow, etc.; we also propagate varieties of somewhat feeble habit, like Horace Vernet, Louis Van Houtte, Marie Baumann, Xavier Olibo, etc. These sorts are among the most beautiful roses, but they need the vigor of growth which another stock can alone supply.

The Manetti is a very distinct rose, and the suckers it throws are easily told by any observant person from any sort in general cultivation. Most roses have five leaflets, though there are a number of light-colored sorts with seven. The Manetti has seven leaflets, often nine, of deep green; the shoots and thorns are of reddish tinge; when once recognized it is ever afterwards easily distinguished.

The matter may be summed up thus: Persons who know nothing of roses should obtain varieties which are on their own roots, and be content with kinds like Jacqueminot, La Reine and Paul Neyron. Amateurs who are capable of discriminating may be safely trusted to plant budded roses of such kinds as are improved by being worked; the suckers of the Manetti are easily cut off and give very little annoyance to those who know roses.

In England there have always been some to oppose the use of a stock for roses, on account of the trouble the suckers would occasion ignorant planters, but there are now more budded plants in England than at any previous time. If we could keep off the bugs with as little labor as we expend in keeping off Manetti suckers, the culture of roses would be a very simple affair.

[Mr. E. is no doubt correct about the Manetti being in use in America for some years past; but the period we refer to as the time when they were abandoned goes back to twenty years ago at least. And perhaps we were not strictly correct in saying that the stock had entirely gone out of use, even at that time. It would be best to say that they were, about thirty years ago, in almost universal use and then came to be almost abandoned.

In other respects we can endorse what Mr. Ellwanger says. It is unquestionable that many roses will do much better on the Manetti than on their own roots, and any one who knows that his roses are grafted on this stock, who knows how to tell the suckers from the stock and has the good sense to take them off as they appear, will never be sorry he has a grafted rose. It was not this, however, which rendered the Manetti stock unpopular, but that the majority of people who bought roses had not this knowledge and good sense. In short, the Manetti is a good thing for the intelligent grower and a poor thing for the rest.—Ed. G. M.]

HEATING GREENHOUSES.

BY JAMES CURRIE, MILWAUKEE, WISCONSIN.

I have read with interest the valuable hints on hot water and steam heating by Walter Elder in the MONTHLY, page 72. I am much pleased to see the subject receive the attention it deserves, in fact, calls for, as it has been an open and interest-

ing question for years whether hot water or steam is to be preferred for heating greenhouses. The question yet remains unsettled, as is fully shown by the many learned and thoroughly experienced advocates of both systems who from time to time give us their experience and opinions.

I hope to again see the subject referred to in your valuable columns, and trust that many of those who have had the opportunity to make experiments may give us their experience. I am fully assured that hundreds of my brethren in the profession, as well as countless amateurs all over the horticultural world, are greedy to learn more of this subject.

But what I wished to refer to more particularly at this time is your remarks appended to that article.

You say "no one has answered why hot-water pipes must be made to ascend. Hot water, as well as cold, will travel faster going down hill." Now, it strikes me that that last sentence settles the much-disputed question forever, and clearly shows why hot-water pipes should not be made to ascend, except where unavoidable. But as the opinion still prevails that they ought to ascend two, four, six or more inches, according to the various theories, in every hundred feet from the boiler, and although I am not prepared to prove or disprove any of the theories, yet I have been constrained by my interest in the subject to submit to you one or two of my experiences in both systems of conducting the water.

Like the majority of my old-country brethren, as well as those of this country, I have, from the time I first gave the subject my attention and until quite recently, been led to belive that in all hot water arrangements the flow must have a gentle and even rise from the boiler to the end of the house or turning point of the pipe, and a like descent from these back to the boiler. In accordance with that "fixed law," I have until lately laid all pipes with great care, and sometimes at a great disadvantage and loss, on that plan. And when I say, with great care, let me add that on whatever plan the pipes may be laid, I have always found it paid to lay them with care, avoiding all unnecessary undulations or bends, as all such, in some measure, tend to obstruct the flow of the water.

As an instance, I will briefly give an experience I had over a year ago. At that time we built a range of greenhouses, five in number. As the opportunity offered I determined to put to the test a plan I had heard of and had often thought of, that of laying the pipes as nearly level as possible. We used the ordinary 4-inch soil pipe, many of the lengths of which are a little bent, consequently the entire line is slightly undulating. The main, a 5-inch pipe, passes along the ends of the houses, under the floor level. At each side of each house an offset raises the water from the main to about twelve inches above that level. From that point the piers or supports for the pipes were built on one level, the pipes being laid on them, the flow above the return, as is customary, each return bend being furnished with a 4-inch air-escape tube.

All being in readiness and the fire started, a gentle warmth was soon perceptible all along the pipes in all the houses, but as the water reached a higher temperature the pipes in several of the lines gradually grew colder, and I immediately concluded that there was air collected at those points where the stoppages occurred. After several attempts to overcome the difficulty, I at last had all the pipes raised at the return ends about two inches (the houses are about 55 feet long), and the air immediately rushed out of the escape pipes, and since then there has been no trouble from that source. The experiment was enough to show me that nothing was to be gained by laying the pipes level, and also that there is indeed very little motive power in hot water, and that what little there is had better be utilized to the best advantage.

Since that time I have become a convert to what we call here the "down-hill plan" of conducting the water. Although very sceptical for a long time, I am at last convinced that it is superior to all other plans. I need not here give my reasons for thinking so, as should I, it would simply be to repeat what Mr. S. C. Moon has said in his able article on page 75 of the MONTHLY.

Although he has not said so, he undoubtedly means the tanks which receives the hot water direct from the boiler to be furnished with a tight-fitting cover; if not, I would beg leave to suggest that a cover should be fitted to the tank to prevent the evaporation of and loss of heat, and that for the escape of air a small ¼-inch tube be inserted in the cover.

Where a cheaper arrangement may be desirable, a very good substitute for the tank may be had in a perpendicular 4 or 5-inch pipe, according to the size of the flow. This pipe to be carried up about four or five feet above the level of the top of the supply tank; and, by the way, I have found in practice that the more this tank is elevated above the boiler, and provided the inlet to the boiler be in the return pipe and, I think, better close to the boiler, (a very small tube will answer the purpose)

the better will be the flow. But to return to the upright pipe. At about one foot below the bottom level of the supply tank, in this pipe let there be inserted a tee, to which the main is attached, dropped from that point as may be necessary or desirable. The air as it rises from the boiler will float to the surface of the water in the upright pipe and escape, and the water will pass off at the side outlet comparatively free of air.

Last summer one of our florist firms in town made an addition to their establishment by building two more houses, each 10x95 feet, and heated by a 4-inch flow and return pipe on each side of each house. Previous to that, the two small boilers which heat the range seemed to be taxed to their utmost to furnish the necessary heat. It was, however, decided, by way of experiment, to attach to them the additional 800 feet laid on the "down-hill plan." The old pipes are on the old plan. No particular attention was paid to having them at any point on a level with any of the other pipes. The experiment proved much more successful than was ever anticipated. The whole system of pipes now work admirably, all heating simultaneously and evenly, and yet the boilers are not overtaxed. I am confident had those pipes been laid on the old plan, no such satisfactory result would have followed.

But, Mr. Editor, I have already occupied too much of your time; I hope you will excuse me. The subject is one I am fond of talking about, and it is possible I exceed the bounds of patience.

EDITORIAL NOTES.

ROSE TRIOMPHE D'ANGERS.—At a recent meeting of the Massachusetts Horticultural Society Mr. Strong said that there is no rose so free flowering as the Triomphe d'Angers, or that would be so satisfactory to the public. He cultivates it as a substitute for General Jacqueminot. It is not an exhibition rose.

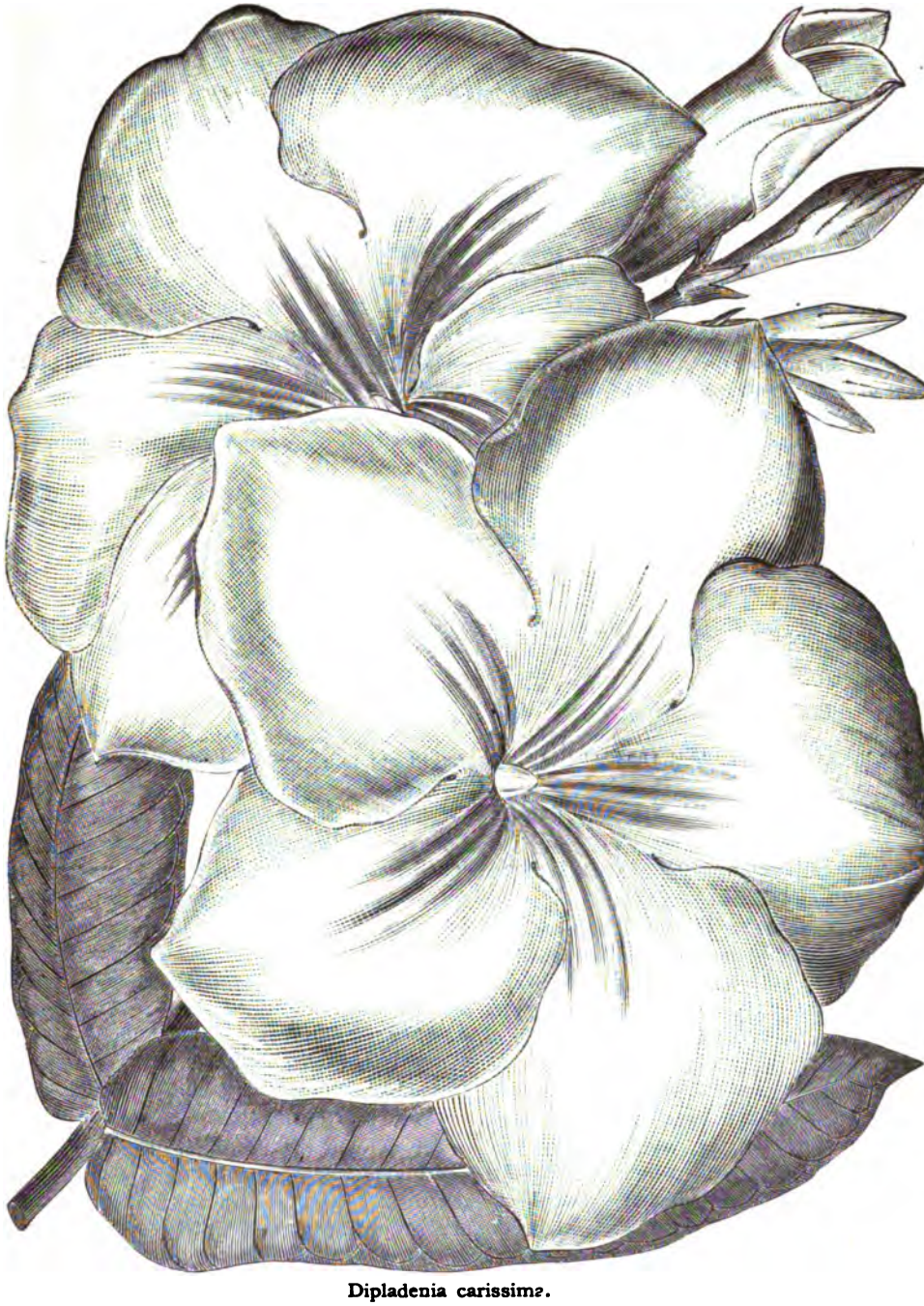
BEGONIA DAVISII.—Messrs. James Veitch & Son, Chelsea, England, write that the credit of the introduction of Begonia Davisii, which was given to Messrs. Haage & Schmidt in our May number, really belongs to them. It was introduced, they say, by them through the collector, whose name it bears, nearly ten years ago.

ORIGIN OF MODERN FASHIONABLE FLORAL DECORATIONS.—The English *Court Journal* says: "To trace the advent of these elaborate decorations we must go back some fourteen years, when Sir Edward Scott had the first grand floral ball at his mansion in Grosvenor Square. The order to a well-known florist was that he (Sir Edward) wished his to be the handsomest ball of the season, and that he would place his house in the hands of the florist for three days to do as he liked, regardless of expense. The decorations caused a perfect *furore*, and it was the means of entirely revolutionizing the style of artistic decoration not only in London, but in every part of the United Kingdom, and, indeed, the whole of Europe and America. What Sir Edward did then to gratify and please his friends for a few hours has been a lasting and continually increasing incentive to the cultivation of flowers, and a great benefit to many thousands of his fellow creatures. It was the great incentive to the cultivation of flowers—a source of pleasure which conveyed a gleam of sunshine into millions of homes, and which has enabled many thousands to earn an honest living, creating within themselves a better life, and diffusing its beneficent influence o'er all around."

POPULAR LOVE OF FLOWERS.—A London paper says that "any one who can remember the homes of the poor in London fifteen or twenty years ago in our back streets and slums will bear us out in saying that scarcely a flower-pot was seen in their rooms or on their window-ledges outside. At the period in which we write you can scarcely go through a street and find a window without some plants in it, either outside or in. This fact being recognized, we come to the natural conclusion that the taste for flowers has increased more than ten thousand fold during the last twelve or fourteen years, and that consequently horticultural and floricultural knowledge has infused into the mind of the people generally a greater love for flowers, thereby improving their tastes and tending to make their homes happier. Then we have to look at the effect of a love for flowers from a commercial point of view. Twelve years ago the number of growers who attended Covent Garden Market could be counted by the number of fingers on our hands. Now they are to be counted by hundreds, and the people employed in the production of flowers by many thousands."

DIPLADENIA CARISSIMA.—It is gratifying to note that amidst the rage for foliage plants those with handsome flowers are not forgotten. The tribe of Apocynaceæ gives us many beautiful plants, usually with sweet, waxy flowers, of which the Stephanotis and Rhyncospermum jasminoides are

familiar examples. This is a new introduction of Mr. Bull, who gives it the following character: "A charming variety of this attractive genus of stove climbers, producing racemes of lovely flowers of a soft, delicate bluish-pink color, with an open throat, marked opposite the center of the oblique limb segments by radiating lines of bright rose. The flowers are about five inches in diameter, of good form and thick wax-like substance. From its distinct character, free habit, and the pleasing color



Dipladenia carissima.

of the flowers, it will prove an excellent companion for the magnificent D. Brearleyana, and like it, will make a first-rate exhibition plant."

BEGONIA WELTONIENSIS.—This is a plant eminently suited to the wants of amateurs, as it is of such easy culture and such excellent habit of growth that failure is well nigh impossible. And it is one of the very best of window plants in cultivation. We grow a quantity of it for vases and conservatory decoration, for it requires neither stakes nor ties to make it into an excellent shaped specimen. Cuttings of it strike freely in moist heat, and if put in early, make a nice succession to the old roots that are dried off and treated exactly the same as Gloxinias or Achimenes. We lay the pots on their sides under the stages of intermediate houses when the winter temperature is about 50°, and in February they are taken out, the old foliage cut clean off and a good soaking of water given and set up on a light shelf, when they quickly push up a number of shoots, the points of which are taken off for cuttings, and the old ball of earth is shaken away and the plants potted in light, rich soil; in the same sized pots as before they are grown on in warm frames or any of the forcing houses, when a brisk, moist temperature is maintained for the earliest flowering batch, and others are kept in cool houses or frames, and the flowering points pinched out to form successions. As soon as the earliest lot show flower they are removed to cooler quarters, when they develop lovely plants and last a long time in beauty; the foliage alone is very pretty, but when surmounted by a cloud of pretty pink flowers the effect is very good. At our local cottage garden show this plant is a great acquisition to collections of window plants shown by cottage and amateur gardeners.—*James Groom, in Gardening Illustrated.*

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

FRUIT CULTURE IN SOUTHERN CALIFORNIA.

BY GEO. H. PARSONS, COLORADO SPRINGS, COL.

(Concluded from page 209.)

Oranges.—Oranges are hardier than lemons, and lemons are hardier than limes. They will all stand a good deal of frost, when at full bearing age, but cold weather causes a thick rind and a lack of juice, and in the lemon a lack of citric acid. Hence oranges from Riverside, in the interior, are quoted at $5.00 to $10.00 per thousand higher than those at Los Angeles near the coast. San Gabriel valley and the valley running fifty miles east and west and about twenty-five miles wide, in which are situated Pomona, Cucamonga, San Bernardino, Ontario and Riverside are among the best known and most successful regions for the growth of citrus fruits. The atmosphere of these valleys is so dry and warm in summer that the scale will not be found on one tree in a hundred and the black fungus is unknown. Here the oranges ripen from January to June and ought not to be shipped before March, when the Florida crop is gone.

The trees should be carefully selected and poor ones never bought on account of their cheapness. The best are two or three year old buds or strong three year old native orange stock. The selection of varieties is of great importance, for different kinds bring different prices, but cost the same to plant. The varieties of oranges that have succeeded best in California so far, are Mediterranean Sweet, Riverside Navel, Maltese Blood, and Thin-skinned St. Michael. The best varieties of lemons planted here, are Lisbon and Eureka, and of limes the best is the Mexican.

Ten acres is enough for a citrus orchard, and one hundred trees, twenty feet apart, are planted to the acre. Oranges and lemons will bear freely at eight years old, and will be in full bearing at twelve years old, yielding then one thousand fruits per tree, per annum. Limes are in full bearing at five years old and are as profitable as oranges. The net profits from full bearing trees are $500 to $1,500 per acre.

The profits of orange culture may be shown by

the following figures, carefully collated from the experience of prominent fruit growers in California. The estimates are low and abundant allowance has been made for errors and accidents.

COST OF ORCHARD.	
10 acres of land, @ $100 per acre	$ 1,000
1000 trees, 3 years, budded on 3 year-old stocks	1,000
Planting and care of orchard, first year	200
Care of orchard for 2 years @ $15 per year per acre	300
Capital required	$ 2,500
RECEIPTS FROM ORCHARD.	
Third year, from trees 9 years old, 50,000 oranges, @ $15 per 1000	$ 750
Cost of marketing	250
Profit 20 %, or 6 % per year	$ 500
Fourth year, 100,000 @ $15 per 1000	$ 1,500
Care of orchard and marketing fruit	500
Profit 40 %, or 15 % per year	$ 1,000
Fifth year, 500,000 @ $15 per 1000	$ 7,500
Care of orchard and marketing fruit	2,500
Profit 200 %, or 52 % per year	$ 5,000
Sixth year, 1,000,000 @ $15 per 1000	$15,000
Care of orchard and marketing fruit	5,000
Profit 400 %, or 110 % per year	$10,000

The price obtained for the oranges in the above estimate is for common sorts. For the finer varieties already named $40 or $50 per 1,000 is generally obtained. The market is always good, and with our rapidly growing country and increasing wealth, it is not likely to fail.

Grapes.—Vineyards are perhaps the most important form of fruit culture, and have the advantage of bearing sooner after planting than any other fruit. The red granite soil of California, and the hot cloudless weather of the interior, are specially fitted to develop the rich saccharine properties of the grape and the fine aroma of the raisin. On the coast where the fogs are frequent, or on rich bottom soils, where the water is within six feet of the surface, the grape although it may be large, is apt to be sour and watery, and to lack the fine appearance which only perpetual sunshine can give. On the other side where there is not sufficient moisture to produce a luxuriant growth of rind the grapes and consequently the raisins are apt to be what might be called lean.

In California where there is almost perpetual sunshine, a level piece of land is best for a vineyard, and a hill-side of northern exposure preferable to one facing south. Level ground will absorb nearly all the water that falls as rain, while a slope will shed it. If a hill-side be used, it should be terraced. The best soil for the grape is a finely divided sandy loam, easily worked, and absorbing and retaining water readily. A sandy soil, by its porosity, has more capacity than a clay soil, to take up air in the day-time, and draw out its moisture during the night. In preparing a vineyard, the ground is plowed as deep as possible four weeks before planting. Just before planting it is harrowed as smooth as possible. For wine the vines should be planted six by six feet, and for raisins eight by ten feet.

Irrigation should be provided, but used very sparingly, for the vines require very little water and will do perfectly well during many seasons, without any more than nature supplies. By excessive irrigation the grapes are made watery and insipid, and inferior for wine or raisins. The phyloxera is the most deadly enemy of the vine, and has destroyed all the vineyards in many places. It has not yet appeared in Southern California, and possibly never may, for energetic measures are adopted to prevent its introduction, and irrigation prevents its growth and spread. Yet the safest way is to plant only varieties grafted on the native stock, which is very hardy and does not succumb to its attacks.

The most profitable use of the grape is for raisins, next for wine and lastly for table use. Very nearly all the raisins in California are made from grapes dried in the open air between the rows of the vineyard. Still it is better to have a drier on hand in case of necessity. The California wine is of very fine quality and improving each year. Much of it is marked and sold as celebrated European wines of different brands, for if marked from California it does not bring so good a price. The variety most used for raisins is Muscat of Alexandria, but the Sultana is supplanting it in many places, making an excellent quality of both wine and raisins. The best varieties for wine, varying according to locality, are Blanc Ellu, Zinfandel, Bergen, Burgundy, and Black Malvoisii.

For Raisins.—The cost and profits of a vineyard for raisins is shown as follows:

COST OF VINEYARD.	
10 acres of land	$ 1,000
5,000 vines, 2 years old, @ $100 per 1000	500
Planting and care of vineyard, first year	250
Care of vineyard, second year	150
Incidental	100
Capital required	$ 2,000
NET RECEIPTS.	
Second year, 500 boxes raisins @ $1.60	$ 800
Cost of marketing	300
Profit 25 %, or 12 % per year	$ 500
Third year, 1,500 boxes raisins @ $1.60	$ 2,400
Care of vineyard and marketing	1,000
Profit 70 %, or 32 % per year	$ 1,400

Fourth year, 2.000 boxes @ $1.60	$ 3,200
Care of vineyard and marketing	1,400
Profit 90 %, or 46 % per year	$ 1,800
Fifth year, 2,500 boxes @ $1.60	$ 4,000
Care of vineyard and marketing	1,800
Profit 110 %, or 59 % per year	$ 2,200

For Wine.—The profits of a vineyard for wine are as follows:

COST OF VINEYARD.

10 acres of land	$ 1,000
10,000 2 year-old vines @ $100 per 1000	1.0 0
Planting and care of vineyard, first year	250
Care of vineyard for second year	150
Incidental	100
Capital required	$ 2,500

NET RECEIPTS.

Second year, 4 year-old vines, 80 tons of grapes, 4,500 gallons @ 20c	$ 900
Cost of marketing	400
Profit 20 %, or 10 % per year	$ 500
Third year, 50 tons grapes, 7,500 gallons @ 20c	$ 1,500
Care of vineyard and marketing	500
Profit 40 %, or 20 % per year	$ 1,000
Fourth year, 75 tons grapes, 11,250 gallons @ 20c	$ 2,250
Care of vineyard and marketing	750
Profit 60 %, or 30 % per year	$ 1,500
Fifth year, 100 tons grapes, 15,000 gallons @ 20c	$ 3,000
Care of vineyard and marketing	1.000
Profit 80 %, or 40 % per year	$ 2,000

The market for raisins and wine is always good, for the reason that they are not perishable, but will keep for any length of time.

Olives.—Olives have the advantage over all other fruits in being longer lived, and an orchard once possessed is possessed for all time. Trees are now in full vigor which were planted many centuries ago. Those planted in Southern California over one hundred years ago, by the early Spanish missionaries, are now yielding crops valued at $150 per tree. They have also the advantage of growing and flourishing in soil almost too poor for anything else. A stony soil is best suited to them and locations contiguous to the sea. They require a climate whose mean annual temperature is not less than 57°. The mean temperature of the coldest month should not be less than 41°, and the thermometer should at no time drop below 14°. At Santa Barbara and San Diego especially, they have proven very remunerative. The Olives of Southern California are preferred by epicures to those of foreign importation, owing to their peculiar nutty flavor. The best variety is the Spanish olive, which is large and fine flavored. They require very little water and attention. Trees are in good bearing at seven years old and will yield a profit of $500 per acre. In nine years they will be in full bearing, yielding a profit of at least $1000 per acre. The profits of an olive orchard for the first five years will be about the same as shown for an orange orchard.

Apricots.—The apricot is one of the most profitable and reliable of fruits in California. In its culture there is this advantage, it is a practical monopoly of Middle and Southern California, for it does not succeed as an orchard fruit in any other part of the United States, nor in any part of Europe. It may be safely said that there is no fruit cultivated in semi-tropic California that pays better during the early years of the orchard, nor one with which the grower is more independent of the market for fresh fruits. It is a favorite fruit with the dryers and canners, and if from any cause there is not a ready sale for the fresh fruit, he can purchase a dryer and evaporate the fruit, producing an article that will command ready sale at the highest market price. The trees do best near the coast, where the foliage can inhale the moisture of the daily breeze. The leading varieties are Moorpark, Golden and Royal.

The profits from apricots are shown as follows:

COST OF ORCHARD.

10 acres of land	$ 1,000
1,000 budded trees @ 25c	250
Planting and cultivation, first year	200
Care of orchard, 2 years, @ $150 per year	300
Incidental	50
Capital required	$ 1,800

NET RECEIPTS.

Third year, 25,000 lbs. of fruit @ 3c	$ 750
Cost of marketing	250
Profit 28 %, or 9 % per year	$ 500
Fourth year, 50,000 lbs. @ 3c	$ 1,500
Care of orchard and marketing	500
Profit 55 %, or 20 % per year	$ 1.000

The aim should be to have the fruit weigh eight or ten to the pound. Smaller than this are not used in canning.

Other Fruits.—Apples, cherries, peaches and plums may be treated like apricots and yield large returns, but are not so profitable as those named before. Many other fruits are grown in Southern California, but not enough is known about them to warrant any positive statements. Figs, walnuts, Maderia nuts, almonds and bananas have all been planted and fruited with great success. But they are too much of an experiment as yet, and beginners in fruit culture should confine themselves to the staple products, oranges, olives, grapes and apricots.

General Orchard.—With a capital of $10,000, an orchard of forty acres can be planted and cared for until it is bearing enough to take care of itself. The best arrangement of such an orchard would be ten acres in oranges, ten acres in olives, eight acres in grapes for raisins, five acres in grapes for wine, five acres in apricots and two acres for house, barn and garden. The profits of such an orchard for five years would be as follows:

COST OF ORCHARD.		
40 acres of land		$ 4,000
Buildings, fences, &c.,	2 acres	1,975
1,000 orange trees, 6 year-old budded,	10 "	750
1,000 olive trees, @ 75c.,	10 "	750
4,000 grape vines, for raisins, 2 year,	8 "	400
6,000 " " " wine, "	5 "	600
500 apricots @ 25c.,	5 "	125
Planting and cultivating, first year, $20 per acre		800
Cultivating, second year, $15 per acre		600
Capital		$10,000

NET RECEIPTS.		
Second year, from grapes for raisins	$ 400	
From grapes for wine	250	
Profit 7½ %, or 3¾ % per year		650
Third year, from grapes for raisins	$1,100	
From grapes for wine	500	
" oranges	500	
" olives	500	
" apricots	250	
Profit 28 %, or 12 % per year		2,850
Fourth year, from grapes for raisins	$1,450	
From grapes for wine	750	
" oranges	1,000	
" olives	1,000	
" apricots	500	
Profit 47 %, or 20 % per year		4,700
Fifth year, from grapes for raisins	$1,800	
From grapes for wine	1,000	
" oranges	5,000	
" olives	5,000	
" apricots	2,500	
Profits 153 %, or		15,300
Total receipts, profit 235 %, or 47 % per year		$23,500

As a general rule it would be better to divide an orchard of the above kind, and raise the oranges and grapes in the interior, and olives and apricots near the seacoast.

EARLY PEACHES UNSATISFACTORY.

BY J. M., PHILADELPHIA.

I am the owner of a small assortment of fruit trees, some peach trees among the rest, and I wish to relate how disappointed I have been with such early sorts as Alexander, for instance. I have a tree of this sort which is and has been a model of good health and of a shapely tree, and of which I had expected great things in the way of fruit. The first year of flowering it set about a dozen fruit, and of this number ripened about the half, the rest were stung, and dropped off at different times before ripening. The second year was a repetition of the first, only on a larger scale, a lesser proportion remaining on to ripen than before. I had later ripening sorts that were doing better than this, and making up my mind that the earliest peaches were not the ones for me, I budded my Alexander with four good later sorts, viz., Stump the World, Mountain Rose, Oldmixon and Smock Late. However, I did not utterly condemn it, but left the centre limb untouched, thinking if it did well this season it should remain. But again the results are to be as before. The fruit set well, but at this writing, June 26th, nearly all the fruit have dropped from the stings of insects. I shall cut out the last limb of the early kind and let the four named as budded on it take the lead next year. I shall do this because my later sorts, such as Crawford's Early and Susquehanna do not suffer to near the extent the Alexander does.

HELLEBORE FOR DESTROYING INSECTS.

BY G. GEDULDIG, NORWICH, CONN.

In the May number "Reader," Berwyn, Pa., asks if hellebore is not dangerous to use on cabbages. In answer to that I say no; it gets only on the outer leaves and the next rain washes it off. I have used it for over eight years and have never found any harm from it. It is not necessary to use enough of it to hurt any one. It is sometimes used dry on currant bushes, and in larger quantities than on cabbage. Is there any record of any one ever having been poisoned from eating currants afterwards? I kill any caterpillar with it on roses, oranges, etc. I believe it is the only remedy for cotton worms. On roses I have used it when they were in flower, when necessary, without spoiling the flowers. Thirty gallons of water to one pound of hellebore is about right. Everybody may be assured that no danger to them or those who eat the cabbage would come from the use of hellebore.

[Probably hellebore, used in the liquid form advised by our correspondent, would injure no one, but poisons on vegetables should be used with caution.—Ed. G. M.]

EDITORIAL NOTES.

AN ECONOMICAL INSECTICIDE.—I am using at the present time a decoction for the destruction of green and black aphides, thrips, and mealy bug on vines, which I find answers the end in view capitally, costs really nothing, and is within the power of anyone with a garden to manufacture at home. I bruise with a mallet 40 lbs. of common laurel

leaves and young shoots, put them into a copper with about 30 gallons of soft water, which is boiled for about an hour. The liquor is then of a nice sherry color, and, of course, very poisonous, but, perhaps, not more so than many insecticides. The above proportions of leaves and water I have used in the diluted state, with soft soap in some cases to give it adhesiveness, and have found no ill results to occur even in the case of tender young growths of either indoor or hardy plants. It has been used this season, after exhausting our bought in remedies, on peaches out-of-doors and in the peach houses after the fruit was picked, on cherries infested with that troublesome black-fly, on melons for red spider, and on all with equally good effect, and it is so cheap that one need not be afraid of using it too abundantly. We keep now a good quantity of it always on hand, so that it can be got at for dipping or syringing at any time. For mealy bug I use it now instead of methylated spirit, and find it just as efficient as the latter. It is advisable when using it on trees carrying fruits to wash it off before it has had sufficient time to dry on the fruit. I mean to try it on apple trees overrun with American blight, and also as a winter dressing in stronger proportions than the above, and I anticipate good results from its use.

[We desire to call particular attention to this from a correspondent of the London *Garden*, because it probably contains the germ of a very useful hint to us. It is well known to entomologists that the odor of prussic acid is deadly to many insects, and the "common laurel leaves" here referred to is the cherry laurel, cerasus lauro-cerasus, the leaves of which abound in prussic acid. We cannot get these leaves in America, but peach leaves or the leaves of the wild cherry would probably do quite as well.—Ed. G. M.]

Disease in Peach Trees in California.—A correspondent from Chico, California, sends sample of diseased peach branches, unlike anything known in the East, and asks for information. It so happens that the editor has himself recently visited California, and saw the same disease in the Sonora, Mocassin and Tuolumne Valleys, and gathered what information he could in regard to the trouble. At some future time he will publish what he has been able to ascertain about it. It seems to have more relation to the twig blight in apples than any other disease; but the peach growers in California with whom the editor talked about it, connected it in some way with the curl.

Popular Strawberries.—The display of strawberries at the June meeting of the Germantown Horticultural Society was an unusually large one. There were exhibited dishes of such sorts as Downer's Kentucky, Colfax, Kirkwood, Cumberland Triumph, Sharpless, Captain Jack, President Lincoln, Dolly Varden, Glendale, Boyden, Crescent Seedling and Primo. The schedule called for two sorts. The successful exhibitors' kinds, for both first and second premiums, were Sharpless and Captain Jack; and the same sorts have led at the meetings for several seasons past. There were Sharpless berries exhibited measuring 7 to 8 inches in circumference. The Captain Jack is an even and beautiful berry, and both sorts are of excellent flavor.

The Currant of Commerce.—Most people who have given the matter a thought know that the currant of the grocer is a kind of grape, which grows in Greece, and differs from the ordinary grape in the fact that the berries are very small and rarely, if ever, produce a seed. The many, however, scarcely give the matter a thought, and few school boys could answer the question, What is

a currant? So we give with this a sketch of the fruit known to gardeners as the Black Corinth grape, and which is taken from a very valuable work, "Vines and Vine Culture," referring to the foreign grape, by Mr. Archibald F. Barron, of the Royal Horticultural Society's Gardens, at Chiswick, London.

We have never seen this grape growing, and hence do not know whether the failure to perfect seed is owing to a deficiency of pollen or an imperfect pistil.

HARDY RASPBERRIES.—Every once in a while some variety is introduced, with the caution not to get that other variety over the way if you want something that is entirely hardy. The Turner was at one time the only genuine hardy kind, the Brandywine was the only true hardy, and if the Thwack was anything at all, it was the genuine hardy, if anything was.

Now we have another "only" hardy one. "The Turner close by were nearly all killed to the ground, and but very few show any foliage a foot above the ground, and cannot bear a crop of fruit. The Brandywine, close by their side, is in very nearly the same condition and cannot bear a crop. Thwack, adjoining them, are no better, and will not produce any fruit this season."

We have no doubt of the correctness of this statement. The gentleman who gives it is well known for careful statements. But what we wish to ask is, what constitutes a hardy raspberry?

PRESERVING AND DRYING FRUITS.—Mr. Charles Joly, of Paris, is doing inestimable service to the French people, by keeping them informed of what the rest of the world is doing, and by which they may profit. An address of his on the subject cited, before the *Societé Nationale et Central d' Horticulture de la France*, has just been issued in pamphlet form, which shows that while the business in Paris, Nantes and Bordeaux at one time almost controlled the world, these cities now have powerful rivals in the United States, Australia and Brazil. Steam has revolutionized the fruit trade, and Mr. Joly says that pineapples from Florida are sold in the streets of London at the same price that first-class apples bring. New Orleans comes in for a good share of favorable notice—"New Orleans, where its numerous languages, as well as its products, furnish the best living example of what happened at the destruction of the Tower of Babel." The address is filled with statistics of the American fruit trade, given in detail, and is profusely illustrated by representations of American fruit peelers and the various first-class appliances by which Americans dry and prepare fruits.

CRACKING OF PEARS.—How little is really known in Europe of the diseases of fruits is evidenced by the statement of opinion in a leading English horticultural magazine that cracking in the pear is from "a want of heat," and it recommends that the pears liable to crack should have the warmest aspects. It does not seem to be known in England that pears crack in the United States, where surely there is heat enough for any pear.

TO MAKE LIQUID MANURE.—Mr. J. B. Moore's method is to get a large tub and place two strips of board across it, and on these to put a flour barrel filled with manure, and having holes bored in it. Water is then poured into the barrel and leaches through into the tub. It must be diluted for use.

THE DATE IN CALIFORNIA.—The date palm in California has produced fruit in several instances. It takes from 15 to 25 years for the trees to become old enough to bear. The male and female flowers are borne on separate plants. The ancients knew that it was necessary for the flowers to be artificially fertilized and practised it on the Date, though it does not appear that they knew anything of the sexes of flowers as understood in these modern times.

FIG CULTURE IN CALIFORNIA.—At a recent meeting of the California Horticultural Society Mr. Rixford remarked that the Smyrna, he had heard, produces more than one crop, but it is only one crop (the second) which is used for drying. In regard to the caprification process, it is considered in Asia Minor essential, and unless it is practiced the crop fails. As you know, the blossoms of the fig are inside of the fig, and the claim is that an insect crawls into the fig, and moving about carries the pollen from the anthers to the stigmas. The importance of fig culture on this coast can hardly be over-estimated. There is no reason why California should not produce all the figs which we need on this coast.

CUCUMBERS IN THE OLD WORLD.—We, in America, where vegetables of so many kinds can be had from nature for little more than the asking, can have no idea how much labor and skill has to be exercised before much can be had in any part of the old world. Cucumbers, for instance, have to be raised in wooden frames, or hot-bed sash, and the heat furnished by stable manure, the whole carefully tended day by day, and more added around the outside, as the temperature declines. Under these circumstances every slight advantage in a variety is noticed, so as to get the greatest number and size of products under the few square feet of glass. A new cucumber, "Kœnigsdoerffer's Indefatigable," comes highly recommended from a German source.

CLAPP'S FAVORITE PEAR.—This variety is in

size and quality very little if any inferior to Bartlett, and matures about two weeks earlier.

THE SUNFLOWER AS AN INDUSTRIAL PLANT.—It may not be generally known that the sunflower (Helianthus annuus), which has lately been brought into such notoriety by the "æsthetic" school, has considerable claims to attention from an industrial point of view. Its somewhat nut-like seeds—or, as Baron Ferdinand von Muller describes them "seed-like nutlets"—afford an excellent oil, which is not only useful as a lubricant for machinery, but is one of the best of table oils. The seeds, again, afford admirable food for poultry, the stocks furnish a good textile fibre, and the blossoms yield a brilliant, lasting yellow dye. So highly does Baron von Muller think of the virtues of the plant that he includes it in his list of selected plants suitable for acclimatization and industrial cultivation in the Colony of Victoria. As much as fifty bushels of seedlings have been obtained from an acre of ground, under favorable conditions, and as much as fifty gallons of oil can be pressed from such a crop. When he states that about six pounds of seeds are required to sow an acre, from which such an enormous return is possible, it is scarcely surprising to be told that "the return from a sunflower field is attained within a few months." The plants, the same authority states, prefer calcareous soil. Baron von Muller, however, has not by any means exhausted the list of virtues which the plant possesses. The Chinese, who have so far appreciated its properties as to use its fibre in adulterating and dyeing their silk fabrics, and its oil not only as a lubricant but as an illuminant, state that its flowers supply the best bee food, and that the "cake" left after expressing the oil is superior to linseed cake as a food for cattle. The leaves are also employed as a substitute for or for mixing with tobacco, and as an ingredient in soap manufacture the oil is highly prized. In face of such testimony to its good qualities, it is interesting to know that several acres of land are to be sown with sunflowers in the Thames valley next year. Will the "æsthetes" discard the flower as a symbol of their faith when they find it is actually turned to commercial purposes?—*Colonies and India.*

QUALITY OF PEARS.—The *Revue Horticole* intimates that the quality of a good pear depends in a great measure on the quality of the person who has charge of it. A fruit, worthless in one man's hands, may be first-rate in the hands of another. It observes that the quality of the fruit is determined by modifications of conditions at the time fermentation begins; for what we call ripening is but the incipient stage of fermentation. For instance, in the case of the Vicar of Winkfield, to have this fruit good, it must go gradually to complete maturity. Other kinds are better when maturity is rapid.

A GOOD BEE PLANT.—Under the name of "White Sage," says the *Pacific Rural Press*, Californians know some half dozen species of plants which are not sages at all, but Audibertias, all of which are famous honey-giving flowers, Audibertia polystachya especially so.

SCRAPS AND QUERIES.

DESTROYING CABBAGE WORMS.—"Reader," Berwyn, Pa., writes: A correspondent in the May number of the MONTHLY, wrote in regard to a poisoning preparation he recommended for destroying "cabbage slug," viz. Hellebore and water. We find air-slacked lime to answer the purpose nicely.

BLOOMSDALE PEARL ONION.—D. Landreth & Sons, Philadelphia, write: We send you for examination three bulbs of Bloomsdale pearl onions grown in Mississippi from sets furnished by us. The sets were planted November 5th, and the mature onions pulled April 12th. You will perceive they measure 19 inches in average circumference; and the combined weight of the three is 4 pounds 14 ounces. We have over a bushel of specimens sent us by customers in the Southern States, and should like you to see them, as they constitute the most remarkable exhibition of onions we have ever seen. No variety that we have ever seen is so rapid in development. The flesh, as you will perceive, is pure white, translucent, very delicate and so free from astringent oil that the bulbs can be eaten uncooked as freely as apples. Due to the precocious character of the sets, they cannot well be kept for spring planting. We therefore recommend them for autumn or winter planting, and anywhere south of the Susquehanna they are found perfectly hardy.

[The above-mentioned specimens came to hand and were truly of prodigious size, and were all our correspondents claim them to be.

We obtained a few of the sets of this onion in the spring of 1882, but were rather late in planting them. Their earliness and mild flavor struck us as being such desirable qualities that an endeavor was made to obtain some the present season for further trial, but the order was sent too late.—Ed. G. M.]

FORESTRY.

COMMUNICATIONS.

FOREST FIRES.

BY PROF. C. S. SARGENT.

(Concluded from page 213.)

Not a small part of central and southern New England, no longer profitable for agriculture, is now growing up with white pine; and this white pine, if it can only be protected, will, in a few years, it is safe to predict, exceed in value the net profit all the New England farms can produce during the next fifty years. In some parts of New England this second growth of pine has been growing for a considerable time, and has already given rise to large and profitable industries. The value of logs cut in Massachusetts during the census year, reached nearly two million dollars; at least one-half were second-growth white pine. More than one hundred million feet of second-growth white pine were sawed during the same year in Vermont and New Hampshire, and nearly if not quite as much more in Maine. The manufacture of wooden ware, an important and growing Massachusetts industry depending upon this second-growth pine, has made Winchendon, Worcester county, the great center of this business in the United States, if not in the world. These young forests of pine are already, then, of great value to New England; at no very distant day they must become one of the most important factors in its prosperity. The problem growing out of the actual condition of the country's supply of white pine, and the effects which any serious diminution of this supply must have upon our prosperity as a nation, need not be considered here at any great length.

The entire supply of white pine growing in the United States and ready for the axe does not today greatly, if at all, exceed eighty billion feet, and this estimate includes small and inferior trees, which a few years ago would not have been considered at all in making such an estimate.

The annual production of white pine lumber is not now far from ten billion feet, and the demand is constantly and rapidly increasing. The publication of these facts a few months ago has greatly increased, and in some cases more than doubled, the value of pine lands in parts of the country; and it does not require any particular powers of foresight to be able to predict that the price of white pine must advance to still higher figures. Enough is now known of our forests to permit the positive statement that no great unexplored body of this pine remains; and that, with the exception of the narrow redwood belt of the California coast, no North American forest can yield in quantity any substitute for white pine, the most generally valuable and most generally used of American lumber. Under these circumstances, the growing pine of New England will soon become an important element in the country's supply. In no other section is there so much young pine growing; and if we cannot compete with the West or the South in the production of cereals and wheat, we have at least in our favor soil and climate better suited to grow pine than any other part of the country. New England cannot allow this opportunity for increased prosperity to be lost. The demand for white pine is rapidly increasing; the extent of the supply is at last known; no available substitute exists to any great extent; we possess already a considerable quantity of young pine, and greater natural advantages than other parts of the country for growing a much larger amount. A market is assured for all that can be produced, and we may look forward with certainty to obtaining prices for pine which promise, if we can judge the future by the past, to make the value of the land covered with thrifty growing pine much greater than that which can ever be obtained for the best agricultural land in the State.

The single danger which threatens property of this nature is the one, real or imaginary, of destruction by forest fires. If this danger, and the dread of it, could be removed, or at least greatly reduced, an investment in young pine growing in New England would promise to capital, in the long run, larger returns than could be derived from almost any other legitimate business enterprise; but so long as this dread of fire exists capital will naturally content itself with smaller and more certain returns. If under these circumstances it is desirable to foster and develop the growth of New England forests, better legislation than now exists for their protection must be secured; and then the public mind must be educated to the importance of forest protection, that the enforcement of such

laws as may appear necessary for this purpose may be possible.

Legislation in advance of public sentiment cannot be expected to accomplish any very marked results; and unless we can learn to appreciate the rapidly increasing value of our woods in their commercial aspect, the passage of laws, however carefully prepared, will not avail a great deal. But to return to the immediate question of forest fires in Massachusetts. The census investigation showed that during the year 1880 fifty-two such fires were set by sparks from locomotives; that forty spread from carelessly burned brush heaps; that hunters caused thirty-seven; that nineteen careless smokers dropped their lighted cigars or burning ashes from their pipes and so caused disastrous conflagrations. In three instances the origin of forest fires is ascribed to the burning of charcoal, and in only eight cases to malice. It appears, then, that the railroads are responsible for the greatest number of these fires; and that the remainder may be generally traced to sheer carelessness. The railroads are already held responsible for the actual damage they inflict upon property in this way; but, as has been shown, the destruction of trees is only a small part of the real damage caused by forest fires. Still the railroads cannot be held responsible under the law for the prospective damage represented by a partial or entire destruction of the plant-producing capacity of soil which they have burned; nor can they well be made to pay for the loss of confidence in forest property which such fires cause. Such damages can neither be estimated nor collected. Fires set by locomotives can, however, be largely prevented by the general adoption of some effectual spark-arrester.

It is true that such a contrivance has not yet been perfected to the entire satisfaction of railroad experts; but if the railroads were compelled to adopt some of the existing patents, American ingenuity and skill can be depended on to perfect them.

It is a case where supply will quickly follow the demand. As a first step, then, towards checking the spread of forest fires, the Legislature should compel all railroad corporations operating within the State to provide their locomotives with spark-consumers. Such appliances are in general use in Europe, and locomotives should not be longer operated without them in this State.

One of the principal dangers to the forest, and more especially to the coniferous forest, which we in Massachusetts, when we increase our lumbering operations, shall soon learn to dread more generally than at present, comes from the custom of leaving scattered about the ground the tops and branches of the trees cut down during the winter. This debris becomes, by the middle of the following summer, as dry as tinder, and furnishes the very best material to feed a fire started in the woods. Any enactment intended to prevent forest fires should contain a provision compelling, under penalty of fine, the collection and careful burning during the winter in which the trees are cut, of all parts of them not actually carried from the ground. The possibility of successfully dealing with persons carelessly setting fire to forests is more difficult and more remote. Such persons rarely confess their carelessness, and still find protection in public indifference.

But until public sentiment makes it possible to convict a person setting carelessly or wantonly a forest fire, and to hold him responsible under the law for the damage he inflicts, the solution of these questions will not be very near. The following was passed by the last Legislature:

An Act for the Protection of Forests Against Fires.

Whoever wantonly and recklessly sets fire to any material which causes the destruction or injury of any growing or standing wood of another, shall be punished by fine not exceeding one hundred dollars, or by imprisonment in the county jail not exceeding six months.

The passage of such a bill, defective as it is, indicates at least a feeling that at last the forests of Massachusetts should be protected. The law as it now stands upon the statute book should, however, be amended. It is not comprehensive enough and it is not severe enough. It would not be very difficult to draft a bill to cover the necessities of the case, if the feelings of the community in regard to the value of forest property were more advanced; but with the existing apathy in regard to the subject, and the impossibility of securing now, without a full discussion by the press and the people of the forest question, the enforcement of any proper law upon the subject, it seems better to present the subject thus generally for your discussion and consideration, without attempting to sketch even the form of such a bill as seems necessary to afford Massachusetts protection from forest fires. The better understanding of the forest question as it exists in New England to-day, which must follow any discussion of this subject, is the best guarantee that our forests will in time be protected, and that they will receive the care and attention which in their present economic aspect, if in no other, they deserve at our hands.

I commend the subject to the most careful consideration of the press and the farmers of New England.

EDITORIAL NOTES.

THE EUCALYPTUS IN FLORIDA.—The Blue Gum seems at home in Florida. Trees at Leesburg are 20 feet high, with trunks 18 inches round, four years from the seed. Pity such a fast growing tree should give such worthless timber.

LOCATION AND QUALITY IN TIMBER.—We noted recently that location had much to do with quality in the same species of timber tree. A correspondent of the London *Garden* writes of an English-grown American black walnut: "You will note that the wood has obtained from our English soil the very character American wood is so deficient in, viz., hardness and weight, approaching in this respect the character of Italian walnut, or what is represented by the words good quality. I am now making from this tree a sideboard which will, I think, be a beautiful specimen of work."

FUEL IN CHINA.—A correspondent of the *Gardeners' Chronicle* writing from the West River, in China, says that there are no natural woods left, except far up in the country, from whence enormous logs of "China Fir" are floated down. For fuel Pinus sinensis is extensively planted, but these are cut down when mere saplings. There is very little grass on the hills, but ferns—Gleichenia dichotoma—abound and cover the ground in every direction. The fern is cut and dried and used extensively for fuel, even the limestone in the limekilns, which are numerous, is burnt with this fuel only.

A LARGE WATER-PITCH TREE.—The *Lancaster Farmer* says:

"A friend has handed us a description of a mammoth water-pitch tree, which stands in front of the dwelling of Mr. Jacob Sener, near this city, which may be designated as the mammoth of the county. It is one hundred and ten years old, about one hundred and fifty feet high, and measures twenty-three-feet around the trunk. One of the lower limbs measures sixty-one feet in length, and five and a half feet in circumference. This tree was planted by Mr. Baer more than a century ago. He had been out riding on horseback, and used a twig as a riding whip; when he returned home he stuck it in the ground, and the present tree is the product. It looks as though it might live another century, and is a striking illustration of what great results may grow from apparent trifles."

This is copied in order to inquire, What is a water-pitch tree? especially as it is desirable to place the paragraph among the enormous number relating to famous specimens which have been raised to magnificent trees after having been used as "riding whips."

TIMBER TREES OF ENGLAND.—England has only eight indigenous timber trees—oak, yew, Scotch pine, ash, wych elm, beech, linden and sycamore—so says the *Gardeners' Chronicle*. The sycamore is probably the "sycamore maple," and not the buttonwood or plane as it would be understood in America.

VALUE OF LOCATIONS IN TIMBER PLANTING.—It has been stated in an English paper that black walnut timber grown in the United States is worth four shillings ($1), and Canadian black walnut $1.25 per foot (cubic?) in Bristol, England, where there is a large demand for it. It is doubtful whether this will hold good of walnut timber grown in some portions of the Union. In the Far West, where trees suffer severely in winter and their vital powers are much strained, it is likely timber may not be as sound as in locations where there are no set-backs from droughts, or extreme cold winds or temperature; for it is well known that what affects the health of a tree affects the durable quality of the timber also. The matter is, however, one requiring the careful attention of timber planters, for there is no doubt that though "walnut from the States," as given in this quotation, is a very indefinite statement, there is a great deal of judgment required in selecting a good location with the view to the most perfect success.

PERFUME FROM ACACIA.—As Acacia Farnesiana thrives very well in the Gulf States, the following floating newspaper paragraph may have some value to our readers there: "Important in reference to their value in rural economy are the Acacia Farnesiana, which produce the fragrant flowers so much used in perfumery, and the A. homomalla, the wood of which is highly prized and dearly paid for by manufacturers of fans. In every Moorish garden in North Africa there can be seen a few trees of the A. Farnesiana, of which the flowers are gathered by women and children for family use; whilst in France and Italy it furnishes a not unimportant article of commerce. In the district of Cannes alone 36,000 pounds of flowers are yearly produced, for which the perfumers pay from 50 to 75 cents per pound, which would amount to about $45,000. One tree furnishes, according to age, from one to five or more pounds; and one acre planted with about eight hundred trees would produce in a few years a notable increase of in-

come to many of our farmers, some pin money to their wives, besides making farm work and farm life both pleasant and profitable to their children. But this pleasant prospect cannot be realized as long as the extraction of perfumes is not undertaken, because the Acacia flowers, like most of those flowers whose perfume is extracted, must be treated while fresh and on the spot."

FIGURES IN FORESTRY PLANTING.—More than anything else we need just now exact figures of the income from forestry planting, and we have much pleasure in giving from the pen of Mr. J. T. Allen to the *Country Gentleman* the following excellent note: "Mr. J. T. Griffin, near Omaha, is just thinning a tract of 15 acres planted in 1860. The trees are 50 feet high, and average 10 inches in diameter one foot from the ground. Taking out the poorest, he is getting from each tree an average of 2½ posts, worth 25 cents each, and two posts for wire fence worth 12½ cents each, giving $96.25 per acre, and leaving 324 of the best trees. The tops for fuel more than pay interest, expense of cultivation, &c. The remaining trees have straight bodies, 12 to 15 feet to a limb. His plan of cultivation has been to plant the nuts ten feet apart each way and cultivate in corn for three years. The corn at 35 cents per bushel would amount to $73.50, or a total, with posts, to date of $175.75 per acre. At the end of five years the tract was seeded to blue grass, furnishing excellent winter pasturage and protection for sheep. In commencing again a plantation of walnuts, at the age of two or three years he would plant between each two a poplar to act as nurses to draw up the walnuts. These should be cut down as soon as a body is grown, leaving a young saw-log in form, if not in size. The value of the cottonwood for fuel, fencing cattle yards, or roofs for cattle and sheep sheds, would be considerable."

TIMBER ON THE PACIFIC COAST.—Fir, pine, oak and cedar of unsurpassed quality and practically unlimited in quantity clothe the mountains, overhang the rivers, and shadow the plains of the Puget Sound district, Washington Ter. On a moderate estimate it is calculated that this region will yield the almost unimaginable quantity of 160,000,000,000 feet of valuable timber. The trees attain a remarkable development both in height and beauty. The yellow fir is frequently found growing to a height of 250 feet, the white cedar to 100 feet, with a girth of over 60 feet; the white oak is 70 feet in height, while ordinary sized specimens of the sugar pine yield from 6,000 to 8,000 feet of cut lumber. The unfortunate part of the reflection is that the greater part of it will be old and rotten—perhaps cleared off as an incumbrance to the ground—before any use can be made of it, and perhaps not fifty years will go over before even this rich arboreal region will be clamoring for encouragement to the planting of more trees.

CLEARING GROUND OF STUMPS.—We cut down trees, and then spend a great deal in blowing out or tearing out the stumps. A machine for taking down the trees, stumps and all, has been invented in Australia. Perhaps it would cost less to saw off the stumps after the tree fell than to blow them out afterwards. However, the machine is thus described:

"A machine, or rather apparatus, for pulling down trees has recently been introduced with success into Queensland. The machine consists of chains, iron rods, a powerful lever, and an iron plate with holes in which to place iron pins on which the lever works. A ladder of 20 or 30 feet in length is also necessary for placing the chain sufficiently high on the tree to be pulled down to enable a good strain to be obtained. The whole affair can be easily carried about on a light spring cart, and only weighs about 3 cwt. The rods are not more than five-eighths of an inch in thickness, the chain links are about the same, while the rods along or at each side of the iron plate are three-quarters of an inch in thickness. The first experiment was made with a tree about seventy feet in height and six feet six inches in girth, which yielded quickly to the strain which the lever brought to bear upon it, was very shortly removed out of its equilibrium, and fell to the ground with a crash in a few minutes from the commencement of the trial, bringing the roots out of the ground with it for a depth of three feet and several feet in circumference. Another tree of larger proportions and apparently a more difficult one was next tackled. It was a closely-knit box tree, situated on the side of a hill and evidently had a firm hold of the ground by the extensive roots attached. In twenty minutes after the chain was put around it this monster of the forest, which must have reared its head and withstood the storms of many years, was laid level with the ground. In another instance the doomed tree withstood an enormous tension. Three times was the length of the lever plate (which is 7 ft.) exhausted before its roots would give up their hold of the ground. It at last, after having been held by the branches of a neighboring tree, fell to the ground. An examination of the powerful roots showed the cause of the great pull that was required to unseat it. On applying the tape it proved to be 66 feet long, with a girth of 4½ feet, and the wood was of a most tough description. The machine was manufactured at Camperdown, in Victoria, in which district similar machines have been at work and have done such effective service that they have earned the name of 'The Forest Devil.'"

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

RELATIONS OF PLANTS TO NATIONAL PROSPERITY.

ABSTRACT OF LECTURE BY PROFESSOR ROTHROCK, FAIRMOUNT PARK.

The lecturer began by a statement of the complications which arose in Virginia over the proportion of land to be devoted to corn and tobacco. This commenced before there was a Pilgrim on Massachusetts soil. Greed for gain led to making the corn crop subservient to the tobacco. The result was a period of scarcity, and, when the Virginia settlers made a demand upon the Chickahominy Indians for corn, they were refused so contemptuously that a fight ensued, in which a number of Indians were killed and others captured. The whites gained the victory, but awakened Indian hate which culminated in a bloody retribution years afterwards.

On the other hand, within a few years after the landing of the Pilgrims, they had corn to spare, and the neighboring tribes "came to depend upon the men of Plymouth for their supply." Thus the want of corn in Virginia was a cause of war, while in Massachusetts the superabundance was a bond of peace. In Virginia it became necessary to limit the production of tobacco by law. In 1623 tobacco was a legal tender in Virginia. When, in 1692, William and Mary College received its royal charter, it was enacted that the College should receive one penny a pound on all the tobacco exported from Virginia and Maryland, towards its support. When the Church of England was recognized as the State denomination in Maryland, a portion of its revenue came from the same source. This was in 1698. Corn was cultivated in Peru prior even to the Inca rule, and also in Mexico and New Mexico at the time of the invasions of Cortez and Coronado. It proved a source of revenue to the Aztec throne, and entered into the religion of the country, where to ensure a good crop human sacrifices were offered. The public granaries of the country were drawn upon by Cortez, so that the very food of the inhabitants was made to assist in their subjugation.

The last census gave the annual yield of corn and rye *combined* in this country at 1,774,783,271 bushels. The data derived from the same source led the lecturer to estimate that one of the products of these grains—whiskey—gave us about 107,000 insane, criminals and paupers. It would be interesting to know how much of those grains was required to blight so much manhood, and to determine whether, if used in some other way, the same quantity would not have yielded a better return to the country. The above estimate only included those under restraint, and not those of the unnumbered host who were still at liberty to beat their wives and starve their children. The lecturer thought a tariff on Canadian lumber a mistake, as, without a proportionate benefit to us, it placed a premium on the destruction of our own supply.

Rice among the cereals flourished in grounds where none of the others would grow. Hence it utilized large areas in India, China and Japan, and in our own country, which would otherwise have been unproductive. Though containing less nitrogen than wheat, it has, nevertheless, been the almost exclusive food of some of the hardest worked and most enduring races on earth. It was introduced into our country in 1694 by a vessel from Madagascar, which put into Charleston in distress. One of the most valuable characteristics of this grain is its capacity for adapting itself to varying conditions of soil and climate.

Food plants from their abundance may lead to national and individual indolence, as in the Tropics. In such cases, the stimulus growing out of the demands which temperate regions make upon equatorial lands for their productions, is to the inhabitants of the latter, of inestimable importance. Accumulation of wealth by individuals, as well also as the science of political economy, are characteristic of temperate regions, and mainly of the North Temperate. These distinguishing features both grow, directly or indirectly, out of the need of preparing for times of non-production in times of production. Such an occasion can hardly arise under the Equator. Hence, while the tropics furnish the raw product for their own commerce, the capital, machinery and brains, which transport the product, come from the temperate part of the globe.

ON THE RELATIONS OF HEAT TO THE SEXES OF FLOWERS.

BY PROF. THOMAS MEEHAN.

At the meeting of the Botanical section of the Academy of Natural Sciences, of Philadelphia, on April 9th, Mr. Thomas Meehan referred to his past communications to the Academy showing that in monæcious plants female flowers would remain at rest under a temperature which was sufficient to excite the male flowers to active development. Hence, a few comparatively warm days in winter or early spring would bring the male flowers to maturity, while the female flowers remained to advance only under a higher and more constant temperature. In this manner the explanation was offered why such trees were often barren. The male flowers disappeared before the females opened, and hence the latter were unfertilized. He referred especially to some branches of Corylus Avellana, the English Hazel nut, which he exhibited before the section last spring, in which the male flowers (catkins) were past maturity, the anthers having opened and discharged their pollen, and the catkins crumbling under a light touch; but there were no appearances of action in the female flower buds. There were no nuts on this tree last season. The present season was one of unusually low temperature. There had not been spasmodic warmth enough to bring forward the particularly excitable maple tree blossoms. The hazel nut had not therefore had its male blossoms brought prematurely forward. He exhibited specimens from the same tree as last season, showing the catkins in a young condition of development, only half the flowers showing their anthers, while the female flower buds had their pretty purple stigmas protruding from nearly all of them. Mr. Meehan remarked that his observations the past few seasons had been so carefully made that he hardly regarded confirmation necessary, but believed the further exhibition of these specimens might at least serve to draw renewed attention to his former communications.

EDITORIAL NOTES.

MICHAUX LECTURES.—Among the most popular of institutions is the Michaux Series of Lectures, given by Prof. Rothrock in Fairmount Park, Philadelphia. The eminent botanist, Michaux, left a sum of money, in trust, to the American Philosophical Society for the promotion of botany and arboriculture, and a portion of the fund is devoted to this purpose. They are so popular that often there is scarcely standing room. The abstracts we give were prepared for the *Public Ledger*.

REMOVING TENDRILS FROM GRAPE VINES.—It has from time immemorial been considered excellent practice to remove the tendrils from growing grape vines. It seems scarcely credible that a practice so universal with the best grape growers, and which has hitherto been unquestioned, should really be a bad one. But this is what the *Journal of Horticulture* has mustered up the courage to say:

"We do not consider it a good plan to pinch off the tendrils from the leading growths of young vines so closely as is practiced by many persons. We remember once noticing some thousands of remarkably fine vines in pots in Mr. Rivers' nursery at Sawbridgeworth. The pots were standing on the hot water pipes, and the growths trained about 18 inches apart up the roof above. The grower of these vines was justly proud of his work. They bristled with tendrils, some of them a foot long, and nearly as thick as quills. From a few of the vines, however, the tendrils had been pinched off closely, with the object of noting the effect. Only a dozen or so were so treated, and in every instance they were weaker than the others, which led the cultivator to remark: 'Depend upon it if you want the vines to grow strong and well you must let them put out their horns.' "

AN INTERESTING ARAD.—In our last we gave a sketch of a plant of the Arum family which climbed trees and walls. We now give, in contrast, one which does not climb at all—one from Central America, introduced by Mr. Wm. Bull, Anthurium insigne. It will be observed that while in the former plant the leaves were scattered along a slender stem, so that there may, perhaps, be but ten leaves along a distance of ten feet, we have here the ten leaves all from one central crown. We often see this varying mode of growth on one tree. For instance, on the pear tree or the larch tree, there are long growing shoots and there are spurs. There will be quite as many leaves from a spur in one season as from the long shoot, and we learn that a spur is nothing more than a long shoot which has become so very much coiled up in its spiral growth as to lose its elongated character. What occurs on a single plant, in the instance cited, becomes a distinctive character in other genera or species of plants. At any rate, the manner of growth of this Aroid is precisely that of a spur in a pear tree or larch. There might seem no reason why it should not elongate and have leaves along a scattered stem, as in the Pothos, noted last month, when it would probably form another species of Anthurium,

or possibly change so much with that variation, in other respects, as to be regarded as a new genus.

plant as this should exist as a spur and another have the longitudinal character. But the fact that

Anthurium insigne.

We do know—at least gardeners know—why a pear tree bears spurs instead of branches; but no one seems to have been able to tell why such a

we can get a glimpse of the law in the pear or larch shows that there is no reason why we may not some day get to know all about it in such cases

as these; and these considerations give great encouragement to those who believe they may some day be able not merely to give good guesses as to a belief that species and genera have been evolved out of one another, but actually to show how the species are made, and possibly make them to order.

Mr. Bull says this plant is a real beauty for the cultivator. It is, he says, a noble and striking Orontiad, imported from the United States of Colombia. The leaves have terete petioles, which are slightly sheathing at the base. The leaf-blade is three-lobed, deflexed at first, afterwards elevated, the middle lobe lanceolate, and the two lateral lobes semi-ovate, being most developed on their exterior edge; these lateral lobes have from three to five longitudinal ribs, and the central one is pinnately veined, with a connecting veinlet running about half an inch within the margin. The young leaves have a bronzy tinge before taking on the full green of the mature foliage. It is a very striking plant, and one which should be found in all collections of choice novelties. This was one of the new plants with which Mr. B. gained the first prize at the International Horticultural Exhibition, held at Ghent in 1878, and the first prize at the Great Show of the Royal Horticultural Society, held at Kensington in 1880.

FAVORED CLIMATES.—We often hear of the cold inhospitable northern regions, and favored southern climates, where Nature does everything, and all man has to do is to lie on his back and let the generous harvest drop into his mouth. But, reading the *Tropical Agriculturist*, one of our exchanges from India, we find they are pestered beyond measure by all sorts of ills. The larvæ of the cockchafer, or as we know it here the "May-beetle, feeds on the roots of the coffee to such an extent, and the leaf fungus preys so alarmingly on the foliage, that it takes labors like those of Hercules to get a successful coffee crop. So with Cinchona, which, grown for quinine, we are told in the United States, is such a grand success in Ceylon. The climate is good enough for it and it grows, but what with blights, and moulds and insects, the cultivator often gets sick at heart. As for the insects, as a last resort, they talk of introducing the English sparrow. On this subject the controversy waxeth warm. Some assert that these birds have proved such an unmitigated nuisance that large rewards are offered for their destruction, while others point to the United States, where, it is confidently asserted, "heavy penalties have been enacted by Legislatures and city governments for their protection, as much as five dollars per bird being the fine on those who destroy them."

These proceedings go to confirm a point we have often made—that when it is desired to bolster up any doubtful cause, it is much better to go to the other end of the world or to ages dead and buried long ago for arguments in support thereof, than to what people can verify for themselves.

VARIATION OF PLANTS.—The innate tendency of plants to vary, irrespective of any external influences, and of which so much has been made by those who look on this tendency to vary as the primary law in the evolution of new species—receives continual elucidation from new discoverers. A recent contribution is from the pen of Mr. H. Veitch, of New Haven. He shows that wheat is strictly a self-fertilizer — pollinization being effected in the bud—and that it is impossible for the pollen from one plant to reach the stigma of another. Yet, as far as history goes back, varieties of wheat continually appear, and new varieties are being introduced by seedsmen unto this day. These varieties are selected from the crop in an ordinary wheat-field. The plants all grow under the same conditions, and are surrounded by the same circumstances, yet these variations occur under the influence of some hidden law. These variations, once produced, come under the laws of heredity, reproducing themselves with tolerable exactness for a while, but sending out here and there striking departures, which the cultivator selects and preserves when they chance to profit him.—*Independent.*

SCRAPS AND QUERIES.

BIENNIAL FLOWERING OF NATIVE ORCHIDS.—"J. M." writes: "Will you allow me to inquire of the readers of the MONTHLY if any of them have observed a tendency in our native orchids to bloom profusely but every other year? Several years ago I was desirous of obtaining a few flowering specimens of Goodyera pubescens, and visited for the purpose a place where the plants grew by the hundred. I could not find a single plant flowering that year. The present season, on a like errand, I went to where some one hundred plants of Cypripedium acaule were growing. The half of the number were large and vigorous, but there was not one had flowered in the lot, though past their season. Can any one say if this is usual with orchids?

LITERATURE. TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

EDITORIAL LETTER.

CHINESE CAMP, Merced County, Cal., June 20, 1883.

Editors are supposed to know everything—and, indeed, if they are sharp, they may learn much, and get into fair habits of imparting what they know. I, as one of the fraternity, love to know as much as possible of what I am talking about, and hence I love to travel. We learn much from books—we all have to learn from books—but the editor should get his knowledge at first hands if possible. There are very few parts of this great country that I have not seen. It is my habit to take quiet runs, now and then, and say nothing about it. But I had never seen the Pacific coast; and though I had a pretty fair knowledge from reading, and could generally talk and write fairly about Pacific coast affairs, it never seemed that I could write as I ought till I had seen this fairy land for myself. So one evening in May I took my wife and a younger son and started on my long journey of, as we figured it out, eleven thousand miles. To-day is but the 20th of June, and we are not yet but half-way on our journey—but as I hope to be home before this letter gets into the reader's hands, I pen it; it is too cool where I write, alongside the Merced river, for the frisky mosquito to worry me much, as it has been doing all day. I shall be pretty well on towards Behring Straits soon, and then it will be wholly too cool for these pests, I suppose; but I find every region has its own annoyances, and I suppose even there, where we lay ourselves down to sleep with the sun going round the horizon like as on a race course, instead of setting down below, as a sober sun should, some trouble or another will be found even there. People who stay at home have no idea of what the zealous traveler has to suffer. With my varied interests I have to be always on the go. I love to see nice farms, fine orchards and pretty gardens. I must make botanical collections, study the rocks and minerals, keep an eye on geology, watch for anthropological tit-bits, and keep an eye on choice bits of physical knowledge, as they happen to turn up. Forestry and tree science generally has never to be forgotten—and then with my love of noting what men and women do and drawing lessons therefrom for use in public affairs, it will be seen that I have a fair share of the world's work to do. I am surely one of the weary travelers we hear tell of now and then—at least we should be weary if, with all our labors and discomforts, our experience was not ever new. To-day we are driving through dust so thick that we can scarcely breathe—to-morrow plodding over some dreary desert, with the alkaline winds drying our lips so that they crack and bleed whenever we smile. Now we are on the top of a snow-covered eminence, with the wind freezing us on one side, while the clear, bright sun warms us on the other; and again, we are going down along some uneven plain on the seats of a stage coach, tossing up and down and almost making the poor being wish he was an oyster, or anything but a creature with a backbone in him. One time he is among the rich and the great, with much of the fearful restrictions which ultra-fashionable life throws about him; and then again, as at this moment, trying to write an editorial by the flicker of a tallow candle, in an humble cabin, with his hands so swollen by mosquito bites that they look like two griddle cakes, while his face in the small piece of looking-glass stuck in a crack over the door looks more like a rough, red raspberry than the handsome, smooth face he once called his own. Sometimes with nothing to eat for twenty-four hours and thirsting for water to drink—at other times with so much of the good things of this world that your next friend is tempted to tell you that a "dose of podophyllin" will soon set you all right, and every fellow you meet tells you of a certain remedy, till you almost wish you may never have another good dinner in your life. Only a few days ago I was toiling up a mountain trail to get a view from "Glacier Point." I was favored by an "extra sure-footed pony" for the ascent. On and on we went for five hours

or more. I was told to have faith in the animal—she knew more than to put herself in danger. It is a good thing to have faith. But somehow, when I turned my face aside to look at the fine trees or handsome flowers, or to glance at the glorious landscape thousands of feet below, my faith failed me, and I would have to look again at the animal's head and see how it behaved; and it was strange how it would behave. To go up a mountain trail we zigzag to and fro, and at every angle my pony would stop and look straight over, surveying the scene below as if she enjoyed it as we might, but to me looking as if she was going crazy and might at any time take a fancy for a flying leap over the precipice. However, we had a glorious day in spite of all our little vexations, till, on returning down the mountain, we found the riderless horse of one of our botanical friends. He had chosen to ride on before, having a faster walking horse than us, and then he would dismount, collect plants and put them in his portfolio. But there was his plant press on the pommel of his saddle, but no botanist anywhere to be seen. We shouted "Doctor, Doctor," and "Yo ho! Yo ho!" till we were hoarse. Whether a bear had taken him, or an Indian had ran off with him, or he had fallen over a precipice, or some similar trouble had befallen him, was canvassed over and over again, but all this was set aside as untenable. The guide settled it all by declaring that the Doctor's "disappearance war mysterious," and we could get no further. It fell to my lot to lead the Doctor's horse, with his plant press, down the mountain side, while my wife would every now and then ride to my side and wonder how she could meet the poor Doctor's wife when we got down to our rendezvous for the night. It spoiled all our pleasure for the rest of the day. But all was well in the end. In the dim twilight we saw our lost friend at the cabin door. His horse had slid by him while he was gathering a plant, and no amount of "wo, John," would induce him to stop. If the Doctor walked fast, the horse walked faster, and when the Doctor ran, the horse ran too. At length the Doctor thought to head the creature off by cutting across one of the zigzag stretches, but it so happened on this occasion there was no stretch there, or he missed it among the underbrush, and there was nothing left for him to do but to work his way down the mountain side, among the rocks and around precipices, among deer brush, mountain mahogany and nutmeg bushes, which, by good luck, he accomplished with only torn pantaloons and a little scared. So there is always something to mar our pleasures—some rattlesnake in every mountain, some serpent in every paradise. However, I fancy I shall have much to tell that will interest the readers of the GARDENERS' MONTHLY before I get through. This letter is only written to let the publisher know that the Editor, so far, is still happy in plodding along on his marked out way. T. M.

HOW I SPENT AN HOUR AT LORILLARD'S RURAL RETREAT.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

Although the season was far advanced, yet the blushing, sweet face of bonnie May was still smiling upon the vernal scene, made beautiful by her flowery presence in forest, field and garden. Momentary glimpses of pretty spring blossoms on bush and tree suddenly appeared and disappeared like kaleidoscopic flashes, as the train darted through a pleasing landscape among cultivated fields and green meadows profusely sprinkled with wild flowers. The ever changing features of harmonious Nature, as I joyfully gazed on her charms while speeding along, seemed as beautiful as ever; when, presto, like a dissolving view, they were gradually obscured and faded away as I approached the unromantic Jobstown station.

Situated about a half a mile from where the locomotive left me is the celebrated Rancocas farm and gardens of P. Lorillard, Esq. The courteous and intelligent chief of the horticultural department, Mr. John G. Gardener, kindly admitted the writer to view the extensive hothouse structures, gardens and grounds over which he successfully presides. The continuous range of five hundred feet of forcing houses is unbroken to the centre, from which a span-roofed projection runs out forty feet to the front, and which is planted on each side with a row of thrifty-looking Black Hamburg grape vines.

To facilitate the production of flowers, fruit or vegetables, and where different temperatures are required while forcing, convenient sized compartments, divided with glass partitions, are arranged consecutively from end to end. All the stages, shelves, boxes, benches, etc., inside are exact duplicates, and can be readily changed or removed as circumstances require. And the whole of this vast area of glass, besides the long outside rows of pits and frames, are effectually heated with a number of Hitching's large-sized boilers, which can be used separately or combined, according to the heat required. The furnace room is a spacious cellar, placed under the centre of the structure, from which ramify the hot water pipes to every compartment,

and by simply turning a valve or two the temperature may be increased or diminished at the will of the operator.

An automatic steam engine for forcing warm or cold water into every house, pit or frame, acts like a charm, expedites the work and saves much manual labor. No insidious green fly, destructive caterpillar, evil red spider, sly thrip, treacherous mealy bug, sinister plant louse, or other vile insect can exist where exasperated "Pluvious," with his aqueous weapons attacks them. And in support of my assertions I need only to refer to Passiflora quadrangularis and Gardenia florida, either of which may aptly be termed the home of Aphis lanigera, or where "they most do congregate," which were here to be seen as clean, vigorous and floriferous as I ever saw them. The first-named plants occupied the back of one of the houses and were trained on a trellis overhead, and from which hung a fine crop of good sized, oval shaped fruit. The peculiar flavor, to those who fancy them, is considered delicious; while the latter, with their snow white purity and exquisite perfume, seemed fit for the goddesses of to-day.

In the center of a house fifty-three feet long some early sweet corn was planted on the 14th of May as an experiment, to which a high temperature will be given as soon as the last large cauliflowers are cut from the sides. From the 24th of December Mr. Lorillard's table has been daily supplied with fine, tender, fresh cauliflowers. Another similar sized house had each day amply furnished quantities of dwarf or snap-short beans from November 1st; successive sowings of which are made to keep up the supply, as each crop bears picking about a month. The portable shelves, which run through the whole range of houses, are suspended near the glass, and on them are placed pots of strawberry plants for early forcing.

Suitable pots, of Mr. G.'s designing, are used. They are not so tapering as the ordinary kinds and nearly straight in shape, with a larger hole than usual in the bottom, through which the roots are encouraged to grow into a bed of prepared moss and bone dust, kept constantly moist, and with astonishing results. Sir Charles Napier is an excellent kind to force, fruit of which was first picked February 9th. The same may be said of Stuart, Topeka and Sharpless.

In a house devoted to tomato growing, from which continuous pickings had been made from the first week in October, was still bearing the kind known as "Perfection;" and in four others of the same dimensions, viz., fifty feet each, flourished luxuriant plants of the handsome Rancocas seedling tomato. Well may Mr. Gardener be proud of his superb seedling, a cross between Acme and Trophy. It is much superior to its famous progenitors, and may be considered the ne plus ultra of its kind. Like the melons, grapes and cucumbers, of which there were excellent examples of successful cultivation, the tomatoes were trained on wire trellises, near the sashes, from which beautifully formed, clean, red-ripe fruit hung in amazing profusion.

Early peach forcing is also extensively carried out; and among the first to mature is the Early Rivers, which ripens in sixteen weeks from the time of blossoming. The next to follow is Early Louise, which requires two weeks longer. Royal George still maintains its good character, while the good old Grosse Mignonne continues to favor its admirers with abundance of large, rich, juicy fruit, some twenty weeks after the time of blooming. Diamond, too, is a gem of the first water.

Growing figs in pots is also a success. The two favorite kinds are Black Ischia and Black Italian. Ripe Black Hamburg grapes were cut early in April, and from one year old vines, in pots, eight pounds each were gathered. There is also a house of fine and vigorous Muscats, which promise well for the future. The same may be said of the pineapples, which were strong, healthy plants for their age.

Among the many attractive features of this unique establishment are two rose houses, well stocked with good blooming plants in pots. One was filled with choice Teas, principally Pearl, Mermet, C. Cook, Niphetos, etc., and the famous old Malmaison which, as a good, steady bloomer, is not to be excelled. The hybrid perpetual house was chiefly occupied with Jacqueminots, Paul Nerons, Anna des Diesbachs, Baroness Rothschilds, Countess of Oxfords, with some of John Hopper, which for perfect form and fragrance has no equal.

Of Orchids were some good Calanthe Veitchi's and a beautiful pure white seedling, raised from a cross between C. Veitchi and C. occulata rubra; splendid Dendrobium chrysanthum, Oncidiums, Lælias, Gongoras, Phalænopsis, Vandas, Brassavolas, maxillarias, etc. Vanilla aromatica seemed as much at home here as in its native habitat. The beautiful Tacsonia Exoniensis was grand indeed. The same applies to Eucharis Amazonica, whose pure white, sweet-scented flowers are much admired. To supply the immense demand for this lovely flower several hundred fine plants are grown.

Splendid large specimens of Allamanda Schottii, in full bloom, for lawn decoration, were ready to put out, and which must have a charming effect throughout the season.

Of ferns, chiefly Adiantum cuneatum and A. Farleyense were grown, in large quantities for bouquet making. Prominent among a variety of beautiful plants stood a huge plant of Phormium tenax var., or striped New Zealand flax.

Both indoors and outside were large tanks containing a choice collection of aquatics, from the magnificent Victoria Regia to the beautiful odoriferous Nymphias, interesting Nelumbiums and Papyrus, curious Cyperus, singular floating Pistia, with a number of other pretty water plants, such as Villarsia, Pontederia, Aponogeton, Sarracenea, etc. For the first time I saw a fine plant of the truly elegant Asparagus plumosus nanus, which is far more beautiful than A. plumosus scandens. Nothing herbaceous could possibly more closely resemble pretty little green feathers than the plant under notice. As yet it is new and scarce and somewhat difficult to propagate, but will become more popular than either ferns or smilax for florists' use when more abundant.

The large mushroom house, in which immense quantities are grown, as well as the well-stocked vegetable garden of fourteen acres, which supplies, besides the family, the heads of departments with first-class vegetables, are sights to see. There are five acres of asparagus for forcing, two acres of which are annually used for that purpose, and two more are planted yearly to be ready to keep up the stock. The excellent condition of all these things I briefly mention attest the skill and good management of Mr. Gardener, of whom it may be truly said "he is the right man in the right place;" and, happily, his princely employer duly appreciates his worth.

In conclusion, what a gratification Mr. G. must experience when he sees "how doth the little busy bee improve each shining hour" beneath a canopy of glass in the winter time. The novel idea occurred to him of introducing a hive of bees into the forcing houses to fertilize the peach and strawberry blossoms. Holes for ingress and egress were made in the glass partitions, through which they passed from house to house and did their work most effectively. Many ingenious devices have been tried to produce artificial fertilization, but these skilful little operators have a far better method of impregnating flowers than man can devise with all his wisdom. Not a blossom seemed to escape their delicate attention, as no abortive flowers were seen.

CHAMPAGNE.

The very interesting chapter on the grapes from which champagne is made, is given from the *London Daily Telegraph*:

GATHERING THE CHAMPAGNE GRAPES.

Within an easy distance of the town of Rheims, and connected with it by a convenient railway, will be found the various localities which yield the grapes from which the popular wine called champagne is made. Covering all the hills and scattered about the plain, occupying every square foot of available space, the vine steadily asserts itself, and, despite the monotonous regularity of the rows, the straitness of the intersecting avenues, and the millions of light grey short sticks to which the vines are attached, it would be unjust to deny the existence of a certain picturesque effect. The gentle undulation of the soil about Rheims considerably favors the growth of the grape. All the vine gardens obtain the full force of the sun, and it may be safely said that they obtain a maximum of heat and a minimum of shadow. The land in France is so very valuable, and the system of peasant proprietorship is so usually followed, that we find in the neighborhood of Rheims a general and equal division of space.

It is commonly but erroneously supposed that each particular brand of champagne is made from the grapes grown on one vineyard, and, further, that every proprietor makes his wine from his or her own ground. This is by no manner of means the case. The Clicquots, the Moats, the Mumms, the Roederers, the Goulets, and the Pommerys, all have special tracts, and naturally employ their own grapes; but at vintage time it is necessary to buy liberally from the humbler growers in order to meet the demands of their gigantic establishments. There is another reason why there should be a mutual exchange of the champagne fruit. This popular wine only obtains its perfection by a careful, artistic, and judicious mixture of juices obtained from the first-class vineyards. It is said that among these Ay is renowned for the sweetness of the grapes; Cramant for its sparkling properties; Verzenay for bouquet; and Bouzy for force or *vinosité*. Doctors differ on the subject of these mixtures. Some manufacturers insist upon carefully divided proportions of Sillery, Verzenay, and Bouzy; of Mareuil, Ay, and Dizy; and Pierry, Cramant, Avizi, and Mesnil; whilst others content themselves with Ay, Pierry, and Cramant. Be this as it may, the true art of champagne-making

is in the mixture of the various qualities when the fermentation of the wine in cask is complete about Christmas time. It requires a careful intelligence to buy judiciously at the time of the *vendanges*, and to prophesy correctly concerning the ultimate value of the perfected grape; but the great art is when the proportions of fermented juice are poured into the huge mixing vat in the cool cellars of the manufactory.

I was struck with the cleanliness, decorum, and cheerful character of all employed on the various vineyards I have visited. There was no noise or disturbance anywhere, and wherever I found the laborers, hard at work among the vines, dressing the grapes for the press, or returning from their work, there was the same order, civility, and frequent merriment. The adjacent towns, villages, farms, and barns fairly accommodate this influx of visitors, and, so far as I could see, there were no signs whatever of drunkenness or disorder. The pickers are summoned by beat of drum at daybreak each morning in the market-place of the villages adjacent to the vineyards, and then and there a price is made for the day's labor. This varies according to the work required to be done and the speed with which it is necessary to accomplish it. The bargain struck, away go men, women, and children into the vineyard, each provided with a small basket and a pocket knife, curved like a reaping hook. They are divided into gangs, each headed by an overseer, and as the small hand baskets are filled they are carried to the end of the row, where specially selected hands are employed in what is called dressing the grapes for the press. In what are known as good years this operation is considered useless, and the manufacturer is compelled to purchase the vintage, good and bad together, just as it comes from the field. But any such reckless system is utterly impossible in most of the vineyards this year. At Verzenay, for instance, will be found a considerable quantity of rottenness, much worm-eaten and mildewed fruit, which if pressed in its present condition would assuredly have the effect of tainting the wine. So the system of dressing, happily for the manufacturer, is almost universal.

Each bunch as it is tumbled into the crate at the side of the vineyard is carefully gone over by female fingers; the bad and cankered parts are rejected, diseased stalks are pruned away, and some attempt is made to send the grapes to the press in a decent condition. But even this hurried inspection is not all that could be desired, and the sharpest eye is apt to be deceived, particularly in the Verzenay vintage of this year. We frequently discovered in the very heart of what looked a regular well-grown bunch, a grape or so absolutely rotten and capable of infecting its companions when they were heaped together in the press. The dressed fruit, when carefully finished and inspected, is quickly borne away in carts to the nearest press, usually situated in the village, and the refuse remaining represents the loss in quantity to the proprietor. The general color of the grape in the Rheims district is black; but there are celebrated vineyards, such as Cramant, which only grow white grapes. It will occur, doubtless, to someone to ask if the laborers are permitted to go upon the old hospitable principle of "eat what you like and pocket none." Nearly every sensible proprietor places no restriction on the obvious temptation of the enjoyment of ripe grapes on a hot day. It is found far the most economical plan in the end, for the first day's debauch ends in such serious inconvenience, and very often loss of wages, that the grapes are left alone from that moment. Women and children are found to be the most skilful pickers, and the men are for the most part employed in carrying the baskets to and fro, emptying the crates, and loading the wagons.

EDITORIAL NOTES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

WILLIAM BROWN.—Just as we go to press we have word of the death of William Brown, a prominent seed collector, of Montreal, Canada. It occurred on the 6th of July. Mr. Brown was well and favorably known in the United States, as well as in Canada.

SAMUEL KINSEY.—It is with much regret we have to announce the death of Samuel Kinsey, a prominent nurseryman, of Kinsey's Station, Ohio. Mr. Kinsey belonged to the Nurserymen's Association, and it was from one of the members of that body that we had the information of his death. He had done much to build up the nursery business in Ohio, and he was very generally esteemed.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

AMERICAN POMOLOGICAL SOCIETY.—Referring to the forthcoming session of the American Pomological Society, which commences at Philadelphia, Wednesday, September 12th, Marshall P. Wilder writes: "I notice with pleasure that you keep the American Pomological Society before the public. The meeting will be a grand one. Delegations are being reported from many States and Societies. The Massachusetts Horticultural Society sends twenty-five, Rhode Island, ten, and New England will come on in full force. Nova Scotia and Canada are in the field, and the South and West will come in with full representations. So the good work goes on. So may it ever prosper, and our land continue to be the most remarkable for its fruits as it is for its love of liberty and human rights."

DENISON, TEXAS, HORTICULTURAL SOCIETY.—From the report of the spring meeting of the above named Society we extract the following useful information concerning grapes and peaches:

"To illustrate the comparative effects of rot upon different varieties of grapes, Mr. Munson presented Irving, Concord, Duchess, Noah, Agawam, Lindley, Salem and Hartford as showing some rot; Brighton, Lady Washington, Black Eagle, Rogers No. 2, and Wilder, rotting severely; Delaware, Walter, Rochester, Moore's Early, Champion, Elvira, Triumph, Martha, Pocklington, Lady, Prentiss, Herbemont, Mary Ann and Goethe, showing the slightest signs of rot in a few scattering berries; Early Victor, Perkins, Ives, Cynthiana, Bacchus and a choice Postoak removed from the woods, show no sign of rot.

"Mr. M. had Alexander, Amsden, Brice, Ashby, Baker, Kelly's Early, Williams' Early, Larkins, Climax, Engles' Climax, Hynes' Nectar, Cally Scaff, Eureka, Wilder, Waterloo, Alpha, Bowers' Early, Gov. Garland, Musser, and others, which could scarcely be distinguished one from the other, except that Musser is again a little the earliest, Alexander a little the largest and Wilder, Bowers' Early, Waterloo and Excelsior a little the latest. All are productive enough, sure bearers, and like their parent, Hale's Early, subject to rot in wet weather, or in heavy damp lands."

MICHIGAN HORTICULTURAL SOCIETY—TWELFTH ANNUAL REPORT.—T. H. Forster, Librarian, sends us the annual report for 1882. It is as full of information as it is possible for a work of this kind to be. There are reports of intelligent discussions on almost every horticultural topic that could be mentioned. It contains a great amount of valuable information. Reports from many branch societies are embraced, giving it additional value. The Secretary's Portfolio is replete with valuable information. The following extract from the introductory note will show what he has aimed to do. "Again, during the year 1882, I have been gathering from every available source facts, observations, experiments, and opinions in the field of horticulture, and from the great amount of material garnered, I have sifted and pruned, abstracted and epitomized, placing the results of this long and oftentimes perplexing labor in the condensed form which follows this prefatory note. A very large amount of very valuable information has been thrown out, not because it was unworthy, not because it was uninteresting, but for the reason that everything could not be taken, and it was desirable to get such matter as would interest and instruct the largest number of enquirers." T. T. Lyon is President, and Charles W. Garfield, Secretary.

GEORGIA STATE HORTICULTURAL SOCIETY—EIGHTH ANNUAL SESSION.—The Eighth Annual Session of this Society will be held in the City of Barnesville, Wednesday, Thursday and Friday, August 1st, 2d and 3d, 1883.

It is earnestly hoped that there will be a full attendance of all the Fruit growers and progressive Horticulturists of Georgia, as the reunion promises to be one of the most important ever held by the Society.

The citizens of Barnesville, appreciating the importance of the labors of the Society, have made ample arrangements in every particular for the accommodation of the members, who will have free entertainment. A beautiful hall for the meetings of the Society, and large space for the display of fruits, flowers and vegetables have been provided for.

The following railroads will make a rate of four cents per mile; pay full fare going, and upon presentation of certificates of the officers of the Society, the ticket agents will issue return tickets at one cent per mile: Georgia, Central & Southwestern, Western & Atlantic, Atlanta & West Point, Air Line.

The Southern Express Company have agreed to carry, free of charge, all packages of fruits and vegetables intended for the Exhibition. Such packages should be addressed A. J. Blalock, Esq., for Georgia State Horticultural Society, Barnesville, Georgia. The name of sender plainly marked upon the package, and all articles sent in time to reach destination not later than 10 o'clock, August 1st.

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FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

A FEW RARE PLANTS AND SHRUBS.

BY MRS. M. D. WELLCOME.

It is interesting to watch the growth and development of new and rare plants, and every year I add some of these to my collection.

In an article published July 1882, I mentioned two hardy shrubs that were valuable. They have endured another winter and are both attractive—each with its own individual beauty, which is in striking contrast. Dimorphanthus is grand, and though its enormous multifid leaves die wholly in winter, in spring they start into growth with such rapidity that in June they stand revealed a yard in length, and nearly as broad. Hypericum is exceedingly graceful and when it is weighted with its golden blossoms, which continue for several months, it is beautiful. I have added to these other hardy shrubs, from distant places, as I cannot find them nearer home: Abelia rupestris, a dwarf compact shrub, bearing pure white flowers in long racemes, during summer and fall. Andromeda arborea, Sorrel Tree, described as a rare American small tree, known in Europe as the Lily of the Valley tree, from the resemblance of its bloom to that lovely flower.

Carpenteria Californica. This is an extremely rare shrub, even in its native habitat. It is a handsome shrub, the flowers being large, pure white, with yellow tipped stamens. The leaves are broadly lance-shaped, of thick texture, with recurved margins; it grows from six to fifteen feet in height and is very bushy. One of the most valuable shrubs which have been introduced for years. Desmodium Japonicum—a pretty dwarf Japanese shrub, quite hardy. Its drooping branches are entirely hidden by millions of its white flowers, which are freely produced from August to beginning of winter. Idesia polycarpa—a very beautiful new Japanese tree; the flowers are of a yellowish green, and spring from the axils of the upper leaves, in long gracefully drooping racemes. They are deliciously fragrant, and are followed by numerous orange berries about the size of a large cherry. Phygelius capensis—this pretty Pentstemon-like plant I have found quite hardy, it having passed several winters out doors without protection. It grows from three to four feet high and has numerous semi-herbaceous stems, each terminated by a long branching raceme of brilliant scarlet flowers. It is a most persistent bloomer, beginning in May or June and continuing up to frost. The London *Garden* says, "This is one of the most ornamental hardy plants in cultivation."

Of the new plants not hardy, I will specify a few so recently received I am not able to report from personal knowledge. Lasiandra macrantha flori-

bunda—a magnificent plant of good habit and a most profuse bloomer; the flowers are rich violet blue, between five and six inches in diameter, and produced nearly all the year through. Impatiens Sanderiana—the finest floral novelty of the season. It is a superb plant of compact habit, and very branching, perfectly covered with brilliant scarlet flowers which are individually 1½ inches in diameter. This magnificent new introduction was discovered by one of the collectors in Asia, and I can confidently recommend it as one of the finest novelties introduced for years. Collectors saw plants eighteen inches high with three hundred flowers.

Gynura aurantiaca—a hardy plant of such ornamental character as to allow of one's saying that it is not surpassed by any other plant of the same class. The stem and leaves are clothed their entire length with a thick covering of hairs, soft to the touch, and of a beautiful deep violet color which gives an appearance of the richest velvet to the plant, and when combined with the brilliant orange of the flowers, the aspect of the plant is truly superb. Considered the finest of bedding plants.

Sietzia Brasiliensis—this belongs to the gesneriaceous class of plants, and is a very curious new plant with blue flowers beautifully spotted. A very attractive trailing plant, lovely for basket, with round pea-green leaves elegantly striped with white, is Fittonia argyroneura.

I am greatly pleased with a new Zonale geranium, named Apple Blossom. There has long been a very profuse blooming pelargonium with that name, but this is a veritable Zonale, imported from England about three years ago, but as yet little known. Although mine is a wee plant, it has been bearing for three weeks its second truss of flowers, which are white suffused with rosy pink, and, at a short distance, resemble the blossoms for which it is very appropriately named. The pips are so large on the small plant, I think that on one well grown they must be of unusual size. Other choice novelties I will defer to a future article.

SOME JULY BLOOMING PERENNIALS.

BY B.

Passing through my garden to-day, I was struck with the beauty of several yellow flowered perennials in bloom, and it occurred to me that much of the interest of our borders, in the month of July, comes from the blooming of flowers of this color. The first to attract my attention, perhaps from the height the plant grows, for it was the tallest of the lot, was the Heliopsis lævis. It grows fully five feet high, and its large flowers are very conspicuous. The next I met, and a good one it is, was the Chrysopsis villosa. This grows to a height of three feet, is loaded with flowers always, and blooms for a long time. A later blooming species, C. Mariana, is equally as handsome. The next I came to was the conspicuous Rudbeckia hirta, which, although common in the fields near by, I would not like to be without in my border. Following this came Lysimachia ciliata, one of the best of the genus, except perhaps, quadrifolia. If not mistaken, all our native Lysimachias are yellow. Lepachys columnaris and Rudbeckia trifolia came next under notice. The first is very conspicuous, on account of its columnar disk.

Finishing my walk, I passed some nice plants of Aquilegia chrysantha, still with a few flowers on, as it will have for some time yet. I would not like to be without these yellow flowers.

CORNUS ALTERNIFOLIA.

BY E. L.

Possibly what I am about to say may not be news to the majority of your readers. I wish to say, what a beautiful ornamental shrub is the Cornus alternifolia, often called blue dogwood. The flowers are not very attractive, and it is not to them it owes its character, but chiefly to the fruit, which when ripe in July and August, gives to the shrub a character unapproached by any other shrub I know. Even without the fruit it is a pretty object, on account of the drooping habit of its branches. The tendency of the shrub is to become spreading, having what is termed a depressed head. This makes the fruit, which is usually borne in great profusion, quite conspicuous, and is what gives the peculiarly desirable character to the tree. The fruit itself is of a purplish blue color and has reddish stems. This is in pleasing contrast to the deep green of the leaves and branches.

There is not enough use made in landscape gardening of trees and shrubs chiefly valuable for their ornamental fruit. There is a great variety of such sorts, and when it is remembered that their chief attraction is in the late summer and fall months, when flowers are generally scarce, it is an additional reason for the more extended use of them.

[The vase-like form is unique.—Ed. G. M.]

MEMORIALS.

BY EMMA B. DUNHAM.

I think the conceit of planting memorial trees, a very pretty one. Would it not be still more interesting should the initial of the name of the tree correspond with the initial letter of the person's name, whose memory is to be perpetuated? For instance, plant a Linden or Locust for Lily and Lucy; a Mountain Ash for Mary Anna; a Sycamore or Spruce for Samuel. For the memory of parents, if the land will admit of a double row of trees, or an avenue is desired to be shaded, one row might consist of—

Fir, Ash, Tamarisk, Hickory, Evergreen, Rock Maple.

The other of

Maple, Oak, Tulip, Hawthorn, Elm, Red Bud.

Perhaps I have not chosen the trees which together will be the most effective. I mention them as they come to my mind, that I may make clear my meaning. In Southern latitudes most lovely combinations may be found. And in the small gardens of the North, many a pretty fancy can be written in living letters with the hardy flowering shrubs.

CLEMATIS COCCINEA.

BY CHAS. E. PARNELL, QUEENS, NEW YORK.

The scarlet flowering Clematis, Clematis coccinea, is a very handsome hardy herbaceous perennial climbing plant, belonging to the natural order Ranunculaceæ. As the plant is a herbaceous one, the stems die down every winter. In the spring it throws up from ten to twelve strong shoots which attain a height of from eight to ten feet, at the same time covering a space of from ten to twelve in breadth; the foliage being deeply lobed and of a rich glossy green color. The bell-shaped coral red flowers are produced from the axils of the leaves, on strong wiry peduncles, in the greatest profusion, from July until frost. Even if the plant never blossomed it would be well worth cultivating for its elegant green foliage alone; but when we add to this an immense number of rich, deep coral red flowers, which shine as if they were polished, words are wanting to fully describe the beauties of this magnificent climber. The plant is of robust healthy growth, and as it is a native of our South-western States, is perfectly hardy in this latitude. It will grow freely in any moderately enriched deep soil and in any situation, provided it will get the benefit of a few hours sunshine each day, in order to strengthen the vine. Another point in its favor is its freedom from all insect pests that prove to be so destructive to our climbing vines, to say nothing of the trouble and annoyance they cause to the cultivator.

In order to keep the plant in a flourishing condition it should be given every fall a liberal dressing of well decayed manure, and this should be dug in carefully in the spring. Keeping the plant free from weeds at all times and training the shoots to their proper places occasionally, during their season of growth, will do much to increase the beauty of the plant. For the introduction of this desirable novelty into cultivation we are indebted to the enterprising firm of Hallock & Thorpe, of Queens, N. Y. It is customary with many introducers to praise all novelties a little more than their merits entitle them to, but Messrs. Hallock & Thorpe have only told a plain tale, and said but very little concerning the merits of this desirable novelty; but that they consider it thoroughly reliable can be seen from the fact that they have offered a liberal series of prizes for the best grown and flowering specimens during the season of 1884. That this competition will do much to further develop the desirable qualities of this Clematis I do not doubt, and I trust that some magnificent and well-grown specimens will be reported by our enthusiastic plant cultivators.

EDITORIAL NOTES.

CULTURE OF THE ENGLISH IVY.—This famous classical plant thrives remarkably well in Virginia. The writer has seen churches and other old buildings in that State as beautifully covered as in the old world. Further south it is often seen in fair beauty, though generally only on the north side of buildings, or on places where the winter's sun does not strike warmly on them. But they are admirably adapted to use as pot or tub plants, and for this there are many remarkably interesting varieties. It is not generally known that if the fruiting branches are propagated from, the plant will assume an arborescent growth, and they may be trained to a stem which forms a head like a Kilmarnock willow, and then flowers and has a profusion of beautiful black berries, than which nothing can well be more ornamental. A few years ago, the late John Jay Smith, of Germantown, had a fine plant of this character which bore yellow berries, and now we hear a red berried variety has been discovered in Europe. If some little trouble were taken by an enterprising florist,

to introduce ivies in this shape to the American public, they would probably be appreciated.

IMPROVEMENT OF AMERICAN VIOLETS.—The sweet-scented violet of Europe, Viola odorata, is far superior to any we have, in fragrance. Indeed, the few species like V. blanda, which have some fragrance, are not at all showy. In size and color our Viola cucullata, V. pedata, and others, are far superior to the European scented ones. Our large Early Blue violet (V. cucullata) would be superior to any of the European race, if only fragrance could be given to it, and as it often has a little, the quality could no doubt be developed by careful selection.

We make these reflections through reading the following, in the *Garden:* "Mr. Lee, of Clivedon, sends us flowers of a seedling violet, somewhat similar in appearance to V. canina, but richer in color and deliciously fragrant, the individual blossoms being as large as those of Victoria Regina, and of good substance. Apart from its beauty and novelty as regards color, this variety is interesting as being a step nearer the acquisition of a really blue violet than any we have yet had, and which would in many respects be an acquisition."

This Viola canina is the English Dog Violet, and nearly the same as our native Viola Muhlenbergii, which is found here in shady woods. It has no more odor, naturally, than our Early Blue, but if it can be developed to a sweet-scented kind, why not our Early Blue?

THE HACKBERRY AS A STREET TREE.—We are glad to encourage the planting of other trees than the common Silver Maple for street trees. It is the most unfit of all trees. It does very well for a half dozen years or so, but is too "sprawly" in the long run. Dr. Warder says: "In many Western towns the hackberry has been planted successfully for its dense shade, though rather quiet and sombre in tone. In the forest it often becomes a large tree."

In Staunton, Virginia, the writer noticed it to be extensively used. It went there under the name of Sugarberry, the small pea-like fruit having a sugary taste. The botanical name, Celtis, is not hard. Nettle tree was once its commonest name.

WINTER TREATMENT OF ROSES.—Mr. J. B. Moore of Concord, is a famous Massachusetts Rose grower. He plants in rows, four feet apart, and tries to keep the ground clean and free from weeds, and in the fall to bank up the plants about a foot high with earth from the spaces between the rows. When the earth is removed from around the plants in spring they are pruned, the weak, poor wood being cut out, and the slow-growing varieties cut back to six or eight inches, while the stronger growers should be left ten or twelve inches in length.

CHINESE CEMETERIES.—Mr. Maries tells us, in the *Garden:* "I have told you elsewhere, about how the Chinese dispose of their dead at Shanghai. They are little better here at Kuikiang. Go where you will there are graveyards in the fields, on the hills, in the valleys. You can always see the end of a coffin sticking out of the bank, and perhaps a skull or a few bones near. Here people are not placed outside to dry up, but they are buried as soon as dead, not always in the strongest made coffins, and often (if the man be poor) not deep in the ground. Most of the rich Chinese choose a place near the hills, and are buried in a brick tomb with a tablet with name, &c., on it in front. A mound of earth is thrown up round the tomb and trees planted—Willows, Cupressus, and Junipers generally, also Yews, with a small road cut through the mound in front of the tablet. The relations of the deceased come every year to pray, or, as they say, 'Chin-chin.' They then fire off a lot of crackers, offer food to the departed spirit, have a ramble and enjoy themselves generally, and go home for another year. The only few decent trees one sees are either round a temple or near a grave."

THE BEST TIME FOR PLANTING.—At a recent meeting of the Germantown (Pa.) Horticultural Society, Joseph Meehan, in speaking of "The Best Time to Transplant Trees," said in substance: "This is not an easy question to answer. We may say certain seasons are favorable ones, but to name any time as invariably the best, cannot be done. A great deal of the success in transplanting trees depends on the season following. A mild winter may follow fall planting, or a cool, moist summer that of spring. In such cases the plantings would most likely be successful. There are two things required for success in planting, viz: the saving of all fibres and a favorable season following. Trees cannot live without fibres. Roots are of little account, except to sustain the tree in place. It is the small thread-like roots which feed the tree through their tips. A tree with all its fibres saved is safe at any time. Florists carry out this principle nowadays in potting plants. When the soil is worn out the plant is washed of the earth around its roots. Thus every fibre is saved and the plant grows

right on. But in moving large trees it is almost impossible to save every root and fibre; some are generally lost. A very favorable time to the production of new fibres is early fall, as has been often proved. Trees transplanted in September will throw out at once a lot of fibres which will supply the tree with sap for the winter. Early fall is much better than late fall, when roots have been lost in digging, on account of this renewal of fibres. Early spring planting is good, because the ground becomes settled before the buds burst and evaporation commences. Fibres have time to form before the leaves, and thus the necessary moisture is supplied. The most unfavorable time to transplant a tree, which has lost many roots, is just as the buds are bursting. The young leaves are calling for moisture rapidly, and the fibres or mouths to convey the food are not there, and the tree dies. It may be repeated then that trees with all their fibres are safe in spring or fall. Early fall is an excellent time, as the ground being warm it induces new fibres to form. Early spring is good as the tree settles in position before growth commences."

GARRYA ELLIPTICA.—Very few of the beautiful plants of California thrive in the Eastern States, but there would probably be no difficulty in getting them to succeed further south. As gardening is now in a comparatively flourishing condition in the Southern States, it may be as well for our nurserymen who have Southern trade, to experiment with some of the best. One of the prettiest of California shrubs is Garrya elliptica. We know of no attempts to introduce it. We are reminded of its beauty by a note in the *Garden*, referring to its behaviour in England:

"It is by no means so much planted as its merits deserve; for it must I think be admitted that this Garrya is a winter flowering evergreen par excellence. In character of growth it resembles the Elæagnus, but in appearance it is altogether distinct, and when early frosts are not too severe to injure its flowers the long tasselated spikes that droop so gracefully are to my mind particularly refreshing. Like the preceding, we also cut the Garrya pretty freely for indoor decoration. These two plants and some flowering branches of Laurustinus tastefully arranged with a few bright flowers in a large vase make no mean ornament on a dull day in the month of December. We find no difficulty in growing the Garrya in any kind of soil or situation, but its proper place is no doubt in the front line of a choice shrubbery border. It is, probably, quite hardy even in the north of England; here, in the west, the severest winters do not injure it. The proper time for transplanting this plant I consider to be the month of April."

SCRAPS AND QUERIES.

FLOWERING OF THE VICTORIA LILY.—E. D. Sturtevant, Bordentown, New Jersey, whose notes on the flowering of the Victoria regia in the open air, we published last year, writes us that the first flower of this season opened July 20th, forty-five days earlier than last year.

LAUREL OAK.—"C. E. M.," Philadelphia, writes: "Replying to your St. Louis correspondent, who in the June number of the MONTHLY says he does not think the true laurel oak, Quercus imbricaria, is under cultivation, I would say that it has been pretty widely disseminated hereabouts. Thousands of trees of it are raised and sold by Philadelphia nurserymen annually, finding their way to parks and public grounds to a great extent. There are a few nice specimens in Fairmount Park, Philadelphia, and also in some private grounds. I can endorse what is said of its beauty. Its leaves are unlike any other oak, North or South, and it is a rapid and symmetrical grower."

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

BILBERGIA THYRSOIDEA.

BY CHARLES E. PARNELL, QUEENS, NEW YORK.

The thyrse flowering Bilbergia (Bilbergia thyrsoidea) is a very singular and attractive stove, or hot-house plant, belonging to the natural order, Bromeliaceæ. Its native country is Brazil, where, it is said, it can be found growing abundantly on rocks near the city of Rio Janeiro. It is a plant that to some extent resembles a pine-apple in its manner of growth, the leaves being loosely arranged and of a dark green color, rather

wavy, having small serratures and terminating in a short, abrupt point. From the center of the plant arises the inflorescence, consisting of a strikingly beautiful oblong cone, or thyrse, having a crimson stalk, or stem, and rich crimson bracts very regularly arranged. The flowers are, when fully expanded, about the same size as the bracts and of nearly the same color, the oblong sepals being much shorter than the closed up straight, erect petals; as the cone or thyrse remains in perfection for two or three weeks, some idea can be formed of its beauty, the contrast between the bright green leaves and the dark crimson cone being so very striking. Well grown specimens flower freely during the autumn months, or from September to December.

Propagation is effected by division of the plant, and this operation is best performed just before the the plant starts into growth. In order to cultivate this Bilbergia satisfactorily, it should be potted in a compost of one-half well rotted sods and one-half rotted cow manure, or leaf mould, and also mix a quantity of charcoal (broken fine) with the compost. Use a pot suitable to the size of the plant, and take every care to drain it well. When growing, keep it in as warm and moist a situation as one has at his command, and give a good supply of water; but when in a dormant state very little is required, and at that time a temperature of from 55° to 60° suffices. In the cultivation of Bilbergias it is well to remember the fact that great heat and moisture given them, during their season of growth, causes an increase in the size and vigor in the growth of the plant, and consequently an increase in the size of the flowering thyrse; and, whether it is desired to increase the plant or not, it should be repotted every season before its growth commences. Good, strong plants can be obtained of our principal florists at a reasonable price.

HOT WATER BETTER THAN STEAM HEATING.

BY SAMUEL PERKINS, BROOKLYN, NEW YORK.

Being deeply interested in anything that appertains to the heating or management of greenhouses, I have read closely and studied carefully the different articles submitted by your numerous correspondents. There has been a great deal said in favor of steam as a means of heating and its adaptability to greenhouse purposes; in fact some parties have made very extravagant statements, claiming that it required less attention, could be safely left for ten hours, and would save at least one-third the amount of coal that would be required by a hot water apparatus. One would think from these statements that all a florist had to do would be to put in steam and be happy. I was much pleased to read in your July number the articles by Mr. Mylius and Mr. Brenneman, for I consider that they treated the matter very fairly—and being the result of practical experience must naturally be given full credit. They both unite in stating that steam heaters require more attention than hot water—Mr. Brenneman stating that the fire in his boiler must be attended to every fifteen minutes in cold weather to keep up steam. Mr. Mylius does not go so far as this, but still he says that a steam boiler must be looked after at least every three hours in a cold snap. I have spoken to three parties who have steam in their houses and they fully indorse the above statements; in fact one of the parties after testing a steam heater for two winters has taken it out and put in hot water; he said he used about the same amount of fuel that he would have used with hot water, and yet the parties that put it up claimed that he would save one-third.

Now then, let us take Mr. Brenneman's statement in regard to fuel and see how it compares with a hot water apparatus. He says: "Our plant-house consists of 30,000 feet of glass, heated by one boiler of 25 horse-power, having 6,000 ft. of 2-inch pipe, and using about 350 tons of coal." Taking this statement as a standard let us see what hot water would do under the same conditions. According to practical experience plant-houses requiring 30,000 feet of glass to cover them would require about 13,000 ft. of 4-inch pipe to maintain a temperature of 65° when the thermometer outside stood at 20° below zero. I know from practical experience that a hot water boiler of good pattern will not consume more than 36 tons of coal for every 1,500 ft. 4-inch pipe used. Therefore if we use 36 tons per 1,500 ft. pipe and require 13,000 ft. pipe to heat 30,000 feet of glass, we should use about 312 tons of coal. I fail to see where the saving of fuel comes in, for Mr. Brenneman could have saved fuel by using hot water.

To give some color to my statements I would like to mention two cases to show that I have reasonable grounds on which to base my calculations. In the first place I would mention Mr. Gus. Messeberg, Florist, Flatbush, L. I., he has at present about 18,000 square feet of glass heated by hot water boilers manufactured by Thos. W. Weathered, N. Y., the total amount of coal consumed last winter being 150 tons. The man attend-

ing the fire stated to me that he had lost only one night's rest during the whole winter. The other case I would mention is that of David Deans, Florist, Astoria, L. I. He fired two of Mr. Weathered's boilers for seven months (lacking two days); the boilers heated 3,100 ft. of 4-inch pipe, amount of coal consumed 70 tons. These houses were used principally for roses and of course had to be kept at a good heat. I do not wish to take up too much of your space but would like to state that in my opinion most of the greenhouses of to-day are underpiped, florists putting in as little pipe as possible under a mistaken idea of economy. I believe in putting plenty of pipe in a house, in fact sufficient to heat to the desired temperature in any weather without straining; by so doing you will save coal and attention; of course we must have plenty of boiler. I feel fully assured that a greenhouse heated by hot water, the work being done by good mechanics, will have a system of heat that no steam heater can equal, in ease of management, permanence of temperature, and general wear and tear.

THE DRAFT OF FLUES.

BY HENRY MATERN, SANDUSKY, OHIO.

I saw in the March number of the MONTHLY that trouble in starting fires in greenhouses with flues is not over yet. I had my share of it, too; but by the way I have my flues arranged now, trouble is not known, and it is a pleasure to start a fire.

About four to ten feet from the furnace build a flue on the top of the lower one and back over the furnace into a short chimney. Connect the extreme end of the upper flue with the lower one by a damper between the connections, made of heavy sheet iron, hung on a square frame, which is fitted in between the opening of the upper and lower flue. The damper when dropped will close up the lower flue and open the upper one, making an almost direct draft for the smoke to pass out. Now you can start your fire; it will roar. In a short time your coal will be ignited, and furnace and part of the flue well heated. Now raise your damper. I do this by an iron rod on which the damper is fastened. It runs through a hole in the brick and is then bent so that it will stand parallel with the outside of the flue when closed, and is kept up by a weight hung on the extreme end of it. With smoke and gases almost gone, a hot fire in the furnace and part of the flue well heated, there will be circulation through the whole length without any difficulty. I also find this plan very useful in early fall and spring for heating my propagating bed, which I have on top of the furnace and return flue, by making a small fire and the use of the short flue.

This plan may not be new to your readers, but it was to me, and I would not be without it for any money so long as I have to heat a greenhouse with flues.

HINTS ON NEW AND RARE PLANTS, ETC.

BY N. ROBERTSON, SUPT. OF GOVERNMENT GROUNDS, OTTAWA, CANADA.

Besides new plants there are others which may be called rare because they are not frequently seen in collections, although, perhaps, introduced for several years,—because they have not been brought before the public with proper representations, or because intending purchasers fear the getting of inferior or other varieties under the old names.

In England, at the present time, an inferior palm is being sold for that most beautiful of all palms, as it is said to be, Pritchardia grandis. How very disappointing this comes to be to purchasers! Two years ago I saw Begonia Louis Chretien advertised, and I sent for it. On getting it I saw that it in no way resembled the description I had seen of it. This year, in ordering from another party, one was put in that corresponded exactly with what I had read of it, and it well deserves all that is said about it, being the grandest of all the ornamental foliage begonias yet seen. No one who likes such plants should be without it in their collections.

Then, again, in the cactus tribe of plants confusion reigns supreme. I was anxious to make a collection of these plants, but after my first, second and third attempts I abandoned the idea altogether, there being such a duplication of sorts under other names. No work of much importance, I believe, has been as yet published on this tribe of plants, though it is said one is to be published from Kew, where they have such a fine collection of them. People say there is little of interest in cactuses, but years ago I made a bed of them to test this. Every one near went to see this bed, and many lingered long looking and examining those natural curiosities, as they may be termed. But my principal aim is to bring to the notice of plant growers some of those new or rare plants worthy of a place in every collection. Gynura aurantiaca is a new, distinct and beautiful plant, very attractive; besides, its easy cultivation brings it within the reach of every one. Peperomia pros-

trata is another grand addition to basket plants; its beautiful, tiny, marked foliage, resembling argentea. It will undoubtedly be much prized. Philodendrum Carderi will be much thought of. It has been well said that the glossy, shaded green, satiny surface of the leaves imparts a wondrous degree of beauty to it. Pothos aurea; of this plant I cannot say much as my plant is very young, and as yet does not bear out its character, none of those "fantastic shaped blotches of creamy yellow" having yet appeared. Another plant which is said to have the fault of losing its variegation for a time is Lavatera arborea variegata. It came from the seed at first, and, with all the markings represented to have, but has lost them since. If they come out again as they did at first, it is truly represented in Ficus Parcelli. I have many more, but will wait their further development before I express any opinion on them.

To fern lovers Adiantum Williamsii will certainly be thought very fine, especially when the fronds are in a young state. It is truly said that its value cannot be overestimated. Microlephia hirta cristata fully bears out all that has been said of it. The fronds have a charming drooping habit, making it a beautiful plant for baskets as well as a fine ornament in a pot. Nephrolepis Duffi, now introduced some years, but not yet often seen in collections, is perhaps one of the neatest and most beautiful of all ferns, from its upright and unique habit. It is of easy propagation, hardy constitution, and will make a lasting addition to this class of plants; besides this, it is always a splendid ornament on a table. Lastræa Richardsii multifida is a variety that deserves the descriptions given of its beauty. It is one of the most handsome among ferns; no one should be without this one in their collections.

It would be of great benefit to many if growers of new or rare plants would let us know what are their views on many of the new introductions.

MERVEILLE DE LYON ROSE.

BY W. F. HIBBERD, LOUISVILLE, KENTUCKY.

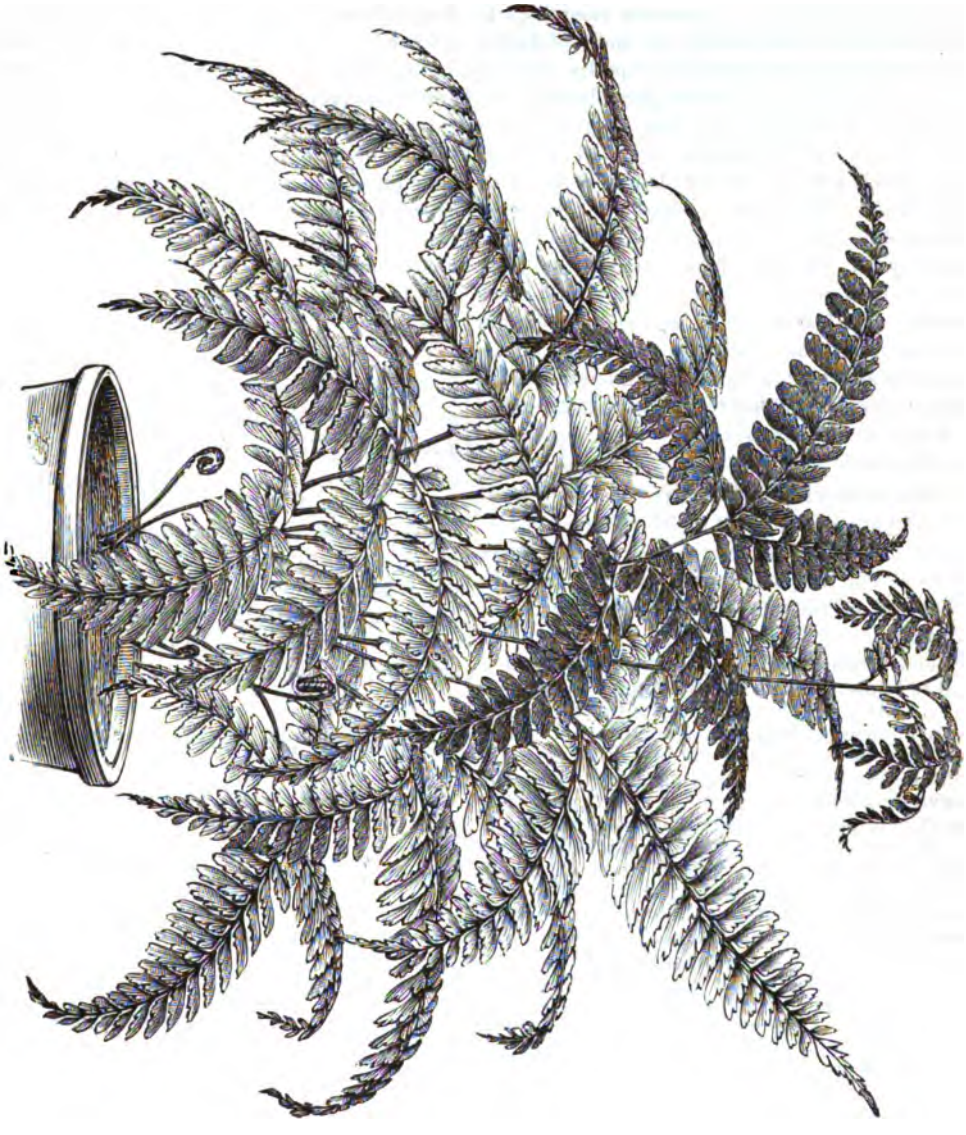
We hear much about the rose Merveille de Lyon as a white Baroness Rothschild and I fear some misconception of its characteristics will result. Early in the spring I saw at one of our florists' very perfect flowers, on imported plants that had bloomed as I venture to say few imported plants are ever bloomed; and later I found a number at another establishment. That one of its parents was a Baroness Rothschild cannot be questioned, the short heavy wood and the quantity of its peculiarly arranged leafage furnishing ample testimony on that point. But there was evidently another and considerable factor at work. I know it is spoken of as a sport but do not recollect that the raiser is responsible for the statement, and the flower is strong presumptive evidence to the contrary. The rare beauty of Baroness Rothschild consists in the shell-form of its large petals and the pearly, glistening freshness of its color. Now we miss both these qualities in the new variety. The outer petals are of good size, but the center is closely filled with shorter ones arranged wonderfully like those in Malmaison, and the ground coloring of white is creamy, not clear. I hardly need mention that in these respects it has wandered far from its nominal source. The rose is beautiful, the fine outer petals recurving so softly as to charm even a virtuoso. Its size is good, not great, and the buds open readily, which argues well for its use in forcing. In all the specimens I met with there was a very apparent shade of pink—absent in the extreme outer row but showing through from the center—which lacked brilliancy from being on a creamy base. In short it is a beautiful white rose but not what would be naturally expected from a white Baroness Rothschild, and in my estimation, not so fine as Madame Lacharme when that rose happily consents to open.

HOW TO CLEAN A COMMON FLUE.

BY CHIP.

While it is to me very interesting to read the pros and cons in favor of steam or hot water heating, I venture to give my "How to Clean a Common Flue." In one house I heat with a flue. It is made in the best manner, is over 70 feet long and has 14-inch square tiles on top, lapped in grooves. To clean it without taking off every ten feet or so, was of some consideration to me. Well, I take off one tile, say about 7 or 8 feet from the fireplace, also one next to the bend or entrance of the chimney. Then I get a cat, take a ball of cotton twine, such as is used for tying up flowers, fasten one end to one of pussy's hind legs, introduce her in one of the openings, and by kind persuasion make her creep through the flue, playing out twine as quick as she goes. If she stops on the way, a gentle pull will soon set her in motion; watch for pussy on the other end, relieve her; then fasten a rope or strong garden line to the twine and draw it through. Get old bags, tie up

in as big a bundle as will conveniently go through your flue and keep at see-sawing—so to speak—until your flue is clean.



Adiantum tetraphyllum gracile.

EDITORIAL NOTES.

ADIANTUM TETRAPHYLLUM GRACILE. — This beautiful Maiden-hair fern was sent by one of the collectors of Mr. Wm. Bull from the United States of Colombia. It is of moderate stature, and remarkable for the beautiful reddish tint assumed by its fronds when first developed, and continuing until they are fairly expanded. The fronds are bipinnate, on slender black stipes, arching over elegantly at the top, and dividing into from four to six linear pinnæ. The red color of the young fronds adds very much to the ornamental aspect of the plant, which is moreover of an elegant mode of growth.

TODEAS AT GLASNEVIN.—The house devoted to Filmy Ferns is in a well shaded position. It is not usually open to the public, as the delicate leaves would be easily injured, and cold draughts of air are especially hurtful to them, though even in the coldest weather no artificial heat is given. Todeas grow there to perfection. The largest

specimen of T. superba has leaves 3 feet long, and the plant is about 5½ feet through. Some leaves of T. pellucida measure nearly 3½ feet in length, and the plant is about 5½ feet across; its drooping habit is very graceful. T. plumosa resembles T. pellucida, but it is more finely cut and a of darker green shade, more like that of T. superba. Though still a young plant, it is one of great beauty. T. Fraseri has leaves over 3½ feet long. Smaller plants of this fern are grown in a wall of Filmy Ferns, which extends the full length of one side of the house. The position shows to advantage the large drooping feather-like leaves of this Todea. T. barbara (T. Africana) differs entirely from these Filmy Todeas, it much more resembles a Lastrea in habit. The leaves are by no means filmy, nor has it the beautiful coloring of the other Todeas. The two plants of it are grown in different houses, and probably in a higher temperature than that of the Filmy Fern-house.—*C. M. Owen, in Gardeners' Chronicle.*

A HIGH-PRICED ROSE COMING TO PHILADELPHIA.—In a late number of the *Gardeners' Chronicle* is the following reference to a purchase of a new rose by a Philadelphia florist. We presume Mr. Evans, of Rowlandville, Phila., to be the purchaser referred to.

"Some of our rose loving readers may be interested to know that one of Mr. Bennett's seedlings has recently been the subject of a trade bargain, which in magnitude we imagine has not before been exceeded in this, if in any other country where a rose has been the subject bartered. We believe we are divulging no secret when we state that an enterprising Philadelphia plant merchant, Mr. Evans, has bought half Mr. Bennett's stock of the crimson tea rose, William Francis Bennett, for £750, and has legally bound himself not to sell or otherwise dispose of any bud, cutting, or scion, but only the flowers, for a term of four years. The rose in question is not much known, except to those who have visited Mr. Bennett's rose nursery at Shepperton, or previously at Stapleford, but it has made its mark in Covent Garden and other markets, many thousands of its bloom-buds having been sold at highly remunerative prices. As we have before stated, it is one of the most persistent of winter bloomers. As with Wellington's soldiers at Waterloo, so it is with this rose —when one bud is cut off another quickly takes its place. It partakes largely of the Niphetos form, and is a glowing crimson in color. When we remember that in America, roses in winter realise sums that make the English grower's mouth water, it needs no great stretch of imagination to convince us that Mr. Evans' speculation must soon prove a profitable investment."

It is called "William Francis Bennett."

DOUBLE FLOWERS.—In order to obtain double flowers, it has been thought advisable to make use of the pollen from double flowers, where it is possible to obtain it, and to apply it to the stigma of single flowers from which it is desired to procure double-flowered seedlings. M. Lemoine, desirous of experimenting with lilacs, found that the only double-flowered lilac then known had no stamens, and consequently no pollen. He therefore decided to reverse the process, and to fertilize the stigmas of certain double-flowered lilacs with the pollen from some of the best single varieties. The experiment was so far a success, that out of forty seedlings thirty at least yielded semi-double or double-flowers, one of them being very remarkable for its beauty.—*Florist.*

INSECTS.—Dr. H. P. Walcott tells the Massachusetts Horticultural Society: The insect enemies of the chrysanthemum are the green aphis through the season, the black aphis later, the grasshopper and a root louse. The aphides can be destroyed with tobacco water; the grasshoppers must be picked off by the hand, but no remedy is known for the root louse. The formation of the plants is effected by pinching; but to obtain perfection of flower, the Japanese should not be pinched more than once, or the large flowered more than twice, while the pompons may be pinched with safety to any extent up to the middle of August.

SCRAPS AND QUERIES.

STIGMAPHYLLUM CILIATUM.—"J. A. T.," New York, writes: "Will you be kind enough to tell me the name of the enclosed specimen? It blooms profusely every summer, and, although I have had it for some years and many have seen it, I have not been able to get its name. The flowers are yellow, as you will see, and are quite pretty, I think."

[The plant is Stigmaphyllum ciliatum, a lovely climber, which, though long in cultivation, is found in but few collections. It is from Brazil.—Ed. G. M.]

SEEDLING COLEUS.—W. S. Johnston, Greenville, Pa., writes: "I send you a sample of seedling coleus raised here. They are all good bedders. What do you think of them? I also enclose a bloom of a double Bouvardia. It is a sport from a double white. Is it worth anything?"

[The specimens came in good condition. It is quite impossible to say whether they are valuable or not. There are some pretty colors among them. Coleus are chiefly valuable for bedding

purposes. If any of these should possess unusual and desirable colors and prove good bedders they would be sought for, no doubt. There have been numbers of seedlings raised within the past few years, more than many persons have any idea of, yet the older sorts for bedding have not yet been superseded.

It is not unusual for the double white Bouvardia to produce pale pink flowers like the specimen sent.—Ed. G. M.]

Fruit and Vegetable Gardening.

COMMUNICATIONS.

NEW EARLY PEACHES.

BY H. M. ENGLE.

In September number of Gardeners' Monthly of 1882, I gave the result of my experience with new early peaches. From the crop this season I see no reason to change my views of the same, and therefore feel justified in repeating my former assertion, viz.: that there is not actually three days difference in the time of ripening of all the native new varieties claimed to be two to three weeks earlier than Hale's.

My method of testing cannot be questioned, *i. e.*, fruiting them on trees of other varieties ripening at the same period, which I consider the only true method of testing comparative earliness. In my experience there has not been a season that the time of ripening was not reversed, so I have given up to say which is the earliest, until I can be more positive on this question.

I have not tested all the new varieties earlier than Hale's, but have fruited between twenty and thirty of them, and have others of the same class forthcoming, and when I find any that I am sure can be recommended as uniformly earliest, the public shall know it. In size, appearance, and quality they prove also to be about as near alike as in time of ripening, and I would venture to select specimens of all those varieties that I have fruited, and that the most expert judges could not name them except by chance. It is still to be hoped that the limit of earliness has not yet been reached, and that by planting seeds from specimens of the earliest ripening, varieties earlier than any we now have may be obtained.

Until this season I had flattered myself that these new kinds would not become so subject to rot as Hale's, but the unusual wet weather near the ripening period caused them to rot badly.

Early Surprise which was disseminated as extra early proves to ripen with Hale's, but, unless it will rot much, will just fill the place of the latter. It is equal, if not superior, to Hale's in every respect, and in my opinion will prove a valuable acquisition where the latter does not succeed. I am still waiting for a freestone to make its appearance as fine and as early as the earliest.

Wheatly was represented as filling the bill, but am told that it is like all early ones, half cling. I have as yet seen no perfect freestone as early as Hale's.

TWO GOOD APPLES.

BY C. B. O., BUCKS CO., PA.

The apple crop is a partial failure over this part of country, except the Krauser and Water apples. The Water apple is a great favorite here on account of its wonderful bearing qualities, and the beautiful growth of the tree. It is of excellent quality, both for cooking and eating. The fruit is too tender to ship to distant markets. This is the hardiest apple in my collection, both on account of drouth and freezing. In some soils it is more or less apt to rot on the tree, and must be sold as a fall fruit. The Krauser has no superior as a winter apple for market. The tree is a beautiful grower, an abundant bearer, and the fruit invariably fair and hangs well to the tree, which is essential to Winter fruit. The tree is perhaps not quite so hardy as the Water to resist our severe winters. The Krauser bears its fruit on the inside of the tree as well as the outside, and produces about twice as many apples as you expect when commencing to pick them.

[The Water is remarkably productive everywhere.—Ed. G. M.]

PHILADELPHIA MARKET-GARDENING AND SEED GROWING.

BY A CONTRIBUTOR.

Philadelphia is the Metropolitan City of a grand old State, one which not only furnishes all the anthracite coal and the best of iron to the sisterhood of States, but, according to the United States Census Report of 1881, her farmers bring her to a commanding position as an agricultural State, ranking—first in rye; second in hay, buckwheat and potatoes; third in oats and tobacco; fourth in milch cows; seventh in sheep; fifth in the number of farms—these last numbering two hundred and fourteen thousand. Thus, may Philadelphians be proud of Pennsylvania's position in an agricultural way based, firstly, upon the wealth of money her products bring to the pockets of her farmers and, secondly, to the noble position she occupies in providing food for mankind—she is an Empire! One of our most gifted men said, "Agriculture feeds us, to a great extent clothes us; without it we should not have manufactures, and we should not have commerce."

In an agricultural community no man occupies a more important position than he who provides seed-stock of esculents and cereals for his fellow-agriculturists. If of good quality and well selected, he is a public benefactor—if impure, his carelessness or ignorance entails a loss falling directly or indirectly upon every one. Seed farming is in this view the most important of agricultural pursuits, and upon it I propose to draw some reflections, but will first briefly touch upon the subject of market-gardening.

Gardening like other pursuits had its origin in the supply of primitive wants; these increasing, with development on every hand, its details extended till the "gooseberry bush and cabbage," which comprehended a garden in the eyes of Lord Walpole, over-lept the fence and went abroad into the fields to out rank in its money returns acre for acre any other agricultural pursuit. Vegetables are among the most important of foods, being alike used by rich and poor. To a colonist they are invaluable, and when he makes a garden and has plants in growth he begins to feel himself again; 'tis evidence of ownership; he has made wild nature his servant. Socrates said, "It is the source of health, strength, plenty, riches, and honest pleasure." An eminent English writer said, "It is amid its scenes and pursuits that life flows pure, the heart more calmly beats." The same idea expressive of the pleasure of a country life is conveyed in the words of another English worthy of ancient days; this party was like many of the "cits" who now-a-days visit our friends in the Jerseys. "Who so valueth or eateth with so keen a relish the peach he buyeth of the stall-woman in a market, as that which he gathereth after great pains and perhaps peril encountered in the search."

The Romans introduced into England their styles of gardening, but with their expulsion the art, if art it was, was lost. It was not till near the reign of Henry VIII, 1547, that cabbages, salads, carrots, turnips and many other esculents were successfully grown in Holland. Queen Catherine, it is reported, used to send a special messenger to Holland when she wanted a salad. It must have been stale when she got it! Peas were first brought into England in the time of Elizabeth, a quaint writer of that age remarking, "Peas brought from Holland are fit dainties for ladies, they come so far and cost so dear."

British gardening which principally took the form of ornate horticultural embellishment, may be said to have been greatly developed under Elizabeth, a little over three hundred years ago. Not till the reign of George II, one hundred and fifty years ago, was it worthy of much notice, but under his successor it was more fully developed, especially as respects the culture of esculent vegetables, much stimulated by seeds and plants sent over from the American Colonies. It is said this strange and wonderful wealth of plants, a new creation, was the impulse that developed English styles of landscape gardening, about which the English poet Grey, said, "Our skill in gardening, or rather laying out grounds, is the only taste we can call our own, the only proof of original talent in the matters of pleasure." This English poet certainly was a truthful man. Thus it will readily be perceived, that though gardening is the most ancient of the pursuits of man, it was certainly carried on in a very simple manner up to one hundred and fifty years ago; indeed, all garden seeds used in England were obtained from Holland up to the year 1700.

The first work on English gardening was published by Thomas Tasser, who in 1758 enumerated one hundred and fifty species of garden plants, introducing them as follows: "Seedes and Herbs for the Kychen, Herbs and Rootes for salletts and sawce, Herbes and Roots tuboile or tubutter, Stewing Herbs of all sortes, Herbes, branches and flours for windowes and pots, Herbs to still in summer, Necessarie Herbs to grow in the garden for Physic not reherst before."

Anterior to the American Revolution, the settlers in the Colonies sent abroad to their friends for their supply of seeds, and in those days their wants were very simple; quite one-half of the vegetables now used being then unknown—it was before the days of tomatoes, egg plants, sugar corn and okra,—squashes, watermelons and canteloupes were very rare and of such families of plants as were in use the members were of very limited numbers and such, indeed,as would to-day be considered of very poor development. The total number of exotics in England up to this date did not much exceed one thousand species, but about that time the gardener was abroad and the number rapidly arose to five thousand. Up to 1737 the classification of plants was not scientific, but an inharmonious system prevailed, which was so much improved upon by the immortal Linnæus, that he is looked upon the world over as the elevator of botany into a science, and giving an impetus to agricultural and horticultural affairs, far exceeding all efforts preceding his day. His investigations and those of others swept away a mass of ignorance connected with vegetable physiology and put the cultivator on a plane of higher thought and action,

The noise of the guns of the Revolution had hardly died away, when in 1784 the first seed establishment in America was founded at Philadelphia by David Landreth; seven acres then being considered an area quite sufficient to meet the demand for seeds and plants. The originator of that enterprise laid the foundation so solidly that his grandsons to-day continue the business, now in its one hundred and first year!

At various intervals other seed firms have sprung into existence, in Philadelphia, till now there are in this city eight or nine well-known firms. Thus Philadelphia to-day holds, as it always has, the preeminence in the seed business—leading all other cities in the Union both in the aggregate of seeds sold and, better still, in quality of stock—due to its situation amidst countless market gardeners, a culture inaugurated by the early Swedish colonists, whose descendants to-day follow the pursuits of their fathers; constituting the most discriminating class of market-gardeners to be found anywhere.

In a horticultural sense Philadelphia has always been famous—for many years the largest city and the most wealthy—people of means and leisure were attracted to it as a most agreeable residence; and thus were reared those old historic country homes which, circling round, lent such a charm that no praises were too high for the lips and pens of men famous during the last century—Washington, the poet Moore, Lafayette, Talleyrand, Baron Steuben and Louis Philippe.

Situated on the fertile banks of the Delaware, the city is surrounded in every direction by market-gardens—we should say market-farms, to better illustrate the extent—the chain extending over Pennsylvania, New Jersey, Delaware and Maryland. Soils under summer sun producing vegetables of the semi-tropics as well as of the more temperate zones, pouring into the city's markets a rich return for seeds distributed, each farmer on the constant watch for some accidental development, or sport of nature as it is termed, exceeding its parent in earliness of maturity, weight, color, form or flavor. None of the markets of Europe present such a range of esculent foods as do these of Philadelphia. In England the only good vegetables are the blanched sprouts of perennial plants, and potatoes, turnips, cauliflowers, lettuce and cabbage, the three latter full of slugs. Their peas are tough, beans stringy, tomatoes flavorless, melons squashy, vegetable marrows miserable.

Nowhere in the world is such an acreage of vegetable farmers as those looking to Philadelphia for their seed supplies. The southern half of New Jersey is in proper rotation almost all devoted to trucking, and this section comprises three million acres of land. One and one-third million acres including all Delaware and the Eastern Shore counties of Maryland forms the peach growing peninsula, at the base of which stands Philadelphia, and is as largely devoted to trucking as to peach growing. To this add the countless vegetable growers in the four Pennsylvania counties adjacent to Philadelphia, and we have an area of five million acres of land suitable for vegetable farming and on a very large part of which the business is pursued, practically and profitably. The vegetable crops are varied in themselves, and are alternated with fruit, grain and grass, the rotation bringing around in proper time the culture in truck of nearly the entire acreage. Southern New Jersey has been called the "vegetable garden" of the Union. It possesses everything to insure success, soil, climate, natural fertilizers, almost limitless rail and water communications to almost limitless markets. The system of diversified agricultures as carried on in Jersey has transformed the peninsula portion of the State from a wilderness of piney barrens to almost an unbroken truck patch. Esculent vegetables, fruits, berries, grapes and wine making, and now every indication of successful sugar making, affording a system of culture broad enough to ensure success, let the climatic fluctuations of the seasons be what they may.

It may not be out of place to briefly refer to the developing pursuits of sugar making from the cane of early amber and early orange sorghum, and as an example of what can be done by the market-gardeners of New Jersey, Prof. Cook, of the New Jersey Agricultural State Board, reports that "One field of twenty acres, produced over 252 tons, from which were derived 24,060 pounds of salable sugar and 14,000 gallons of best quality syrup. The total yield of sugar as returned was 319,944 pounds, to which is to be added 40,000 gallons of dense syrup, worth at wholesale thirty-eight cents a gallon. The purity of the juice was remarkable, the co-efficient of purity of single canes being as high as ninety-two per cent while the average was at no time, less than eighty one."

The appellation "Jerseymen" is indeed synonymous with market-gardener, so general is that pursuit in the State. Hundreds of thousands of tons of vegetables grown from the seed distributed from Philadelphia, never enter that city even in transit; they are sent by steamer and sailing vessel to the ports on our Northern and Eastern coasts, New York to Halifax, and by rail to the cities of the West. Immense quantities of tomatoes and sugar corn are canned to be shipped to the uttermost parts; and to illustrate will here state that 1,100,000 bushels of tomatoes were sealed up into cans in the State of New Jersey alone, and in Delaware, Maryland and Pennsylvania 1,477,000 bushels; again, New Jersey puts up an immense quantity of salted green pickles, Burlington county alone salting over 100,000 bushels—incredible some might say, but nevertheless correct. One grower and canner of sugar corn in Maryland plants 2500 acres annually, sealing and distributing the crop wherever commerce extends. The product known equally well at Hammerfest, the most northern city in the world, as at Cape Town the most southern.

Horticulture, one of the most important of the domestic and refining arts, first among other specialties comprehends the growth of esculent vegetables, has, it will be perceived, so extended as to require large areas of farm lands, and it is difficult now to distinguish between the Horticulturist and the Agriculturist—some market-gardeners cultivating up to seven hundred acres.

The farm-gardener has an interesting pursuit in his culture of vegetables, one offering a rare opportunity to the observing mind; the ever-changing influences of heat and cold, wet and drought, fertility and barrenness, producing effects which some time seized upon by the intelligent grower puts him for a time a way ahead of his competitors. Gardening is an art worthy of the pursuit of the most intelligent mind; it is a scientific study every day; its scope has been enlarged during the past thirty years by the discoveries in vegetable nutrition, the chemical constituents of plants, soils and fertilizers, vegetable physiology and botanical affiliations; these all make high farming a science, and one of the most delightful. The hand of man directed by practical and scientific experience laying, as it were, at the feet of nature such materials as nature can take hold of and shape in her own forms. The farm is a laboratory where man is an active agent.

The successful market-gardener must unite the qualifications of the trucker, farmer, merchant and philosopher, for he must investigate the laws of vegetation as well as the laws of sale. Advanced market-gardening, thus it will be seen, is a technical pursuit and one requiring considerable means and a consideration of costs may not be out of place. The capital required in market-gardening far exceeds ordinary farming. The suburban market-gardens about Philadelphia are only worked at double the expense of others more remote—quite five hundred dollars per acre being the capital necessary to stock and conduct them.

This extraordinary expense is somewhat balanced by the frequency with which such gardeners can send their vegetables to market, and the fresh condition in which they are delivered; whereas the distant country gardener has to consign his produce to commission men, taking such prices as the market affords under forced sales.

High as may seem the estimate of $500 per acre as necessary capital, it is nothing compared with the expenses of some market-gardeners near London and Paris. Land on the outskirts of those cities rents for $200 and $300 per acre, often twice that much. In the suburbs of Paris the writer has visited a market-garden of three acres which annually pays a rental of $1800 and yet affords a large profit to its intelligent cultivator.

From this hasty review of market-gardening one readily perceives that in it is invested a deal of capital guided by intelligence and technical experience. Success, however, hinges firstly upon the purity of the seeds sown, and it is here the seedsman enters the arena as an active participant —one wielding an immense power for good or evil.

Seedsmen may be divided into two classes—merchants and seed growers.

The grower of seeds must be, first of all, an able gardener or else he will fail in the beginning, for he must do all that the trucker does and then he is only half way through; he must await, after the development of a vegetable fit for market, the slow production of seed. He is thus twice a cultivator, running twice the risks of a market gardener, wet and drought, heat and cold, tornado and insect injuries, insufficient or excessive fertility. The intelligent seed grower, recognizing the superiority of individual plants in physical characteristics and in potency of seed, the results sometimes of nature's sports and at other times of cross-fertilization, selects them from his general crop, and breeds up varieties of old species sometimes so distinct as hardly to be recognized. But he must not breed too high; he must bring to the culture of his crop of seed, if not scientific, at least very practical observations upon the subject of sterility, a condition so very frequently showing itself under systems of high culture, over-feeding and interbreeding—these influences producing an excessive growth of tissue, abortive flowers, and consequently little seed.

Many seed crops take fourteen to fifteen months from the sowing until harvest; for instance, cabbages, cauliflower, beet, parsnip, carrots, salsify, celery, onion, parsley and many others, all have to be sown during spring months, April and May, and do not produce their seed until the second July or August following. All these vegetables, perfect for domestic purposes, being developed the autumn of the year in which they are sown, but the genera being of biennial forms they have to be carried over to obey nature's laws. Thus the seed farmer is, we say, twice a cultivator and subject to extended injurious influences which do not attach to market-gardening.

Under these conditions the reader will perceive that seed farming cannot every year be a success. There is a certainty of some influences being detrimental to some crops, some being better developed by moisture, some by moderate heat, others by tropical sun. In no location can all crops be grown equally well. As a farmer well knows that certain parts of his farm are better suited for certain crops than others, so the seed grower knows that different counties in different States have their particular advantages.

The seed grower, wherever he be found, will be recognized among the more advanced farmers of his section. To be successful he must have made many steps forward; he must have best land, implements and barns; he must spend money freely for fertilizers and wages; he must be a student of nature and a good administrator, for his plans must be laid further ahead than those of any ordinary farmer, and further than most merchants.

Within the past twenty years seed farming in the United States has taken an extraordinary growth; for before that time seed farmers could almost be counted on the fingers; now specialists in the seed production are found everywhere in the East and West.

Discriminating planters demand American grown seeds; they have been too often deceived in the trash shipped from Europe. They know from experience that European seeds cannot be relied upon to be as good in quality or vitality as American; they know that they are ripened in a climate of much moisture, and consequently do not possess such powers of germination as ours, and they know that the American seed grower as a man is, in intelligence, observation and tact so far ahead of the peasant cultivators of Europe, as to leave no room for comparison as to the results of his labors.

The European, however, working at thirty to forty cents per day, produces seeds which in the eyes of some merchants have the merit of being cheap, and accordingly large quantities are brought to this country and sold by dealers who masquerade as American merchants. They always forget however, to tell their customers the origin of their stocks.

To a market gardener the quality of seeds he buys is of the utmost importance. The stock from which they are grown must be of acclimatized habit, must be judiciously selected of best individual types, thoroughly culled of all sports of root, leaf, or seed, properly harvested to insure the highest percentage of germination, and properly stored and labeled to guard against subsequent error in nomenclature. All these and others, are of vital necessity, as the trucker cannot afford to plant, manure, and cultivate crops which, if bad, only prove bad after months of patient labor and large expense.

Native American grown seeds unquestionably do best under our American sun—foreign stocks do not bear our tropical heat. Under these circumstances the most satisfactory way is to buy American grown seed, and to get it from the producer—those who can say themselves that they grow the stocks they have for sale.

Among the Philadelphia seed firms is one which stands out boldly as a producer of native seeds. Its reputation has been made upon American stock, and it continues still, as it has been for one hundred years, the largest producer on this continent. Such a reputation is to be envied—such a wide acknowledgement of merit is the outgrowth of practical business management, technical ability and honest dealing.

EDITORIAL NOTES.

SUCCESS IN BUSINESS.—There can be no doubt but much of the failures in making fruit growing profitable, as well as in making profitable the various departments of the farm and garden, arises from the indifference to excellence so many exhibit. At the recent meeting of the Western New York State Horticultural Society, Mr. Barry reviewed the nursery business. Let the struggle be as to who will grow the best, not the cheapest. Above all, let nurserymen do all in their power to free the profession from these foul excrescences, the fraudulent, irresponsible agents, peddlers, or whatever names they may be known by. The cultivation of exotic plants, flowers and plants for house and lawn decoration is not improving as it should, considering the increase of wealth and taste among our people. The cheapening process has been carried on to such an extent that it is almost impossible to get well-grown, vigorous plants. In regard to the sending of plants through the mails the speaker said: "On the whole I am inclined to think that the sending of puny little plants a few days or weeks old, with scarcely the breath of life in them, through the mail bags does more harm than good." It is not the mail plants only that are poor and unsatisfactory, but the tendency is to fill the markets with a class of plants so poor as to be dear at any price.

PEACHES IN CALIFORNIA. — Yellow peaches thrive much better than the white variety, the trees of the latter kind being troubled a good deal with curled leaf.

THE CALIFORNIAN WALNUT.—Attempts to cultivate this at Philadelphia have proved futile. It lives through some mild winters, but dies under the severer ones. Some grafted on the black walnut did better, but finally succumbed to the severe climate. In its own country attention is being turned to its merits. In the country between Galt and Sacramento, farmers and others are planting a great many California walnuts, which make much the best shade trees. They are a nut-bearing tree, and the wood is valuable for fuel as well as for various manufacturing purposes. The walnuts grow finely in this section, and trees bear in three or four years.

VARIATIONS IN PEARS.—The Mt. Vernon pear was "brought out" by the GARDENERS' MONTHLY. There could not possibly be fruit of superior quality than those submitted to the editor at that time. Yet there was the same experience as with the Kieffer, some wondering how the editor should even have called it a first-class pear. At the recent meeting of the Western N. Y. Horticultural Society Mr. W. F. Barry said: "A pleasant surprise was experienced the past season with Mt. Vernon. Heretofore the fruit seemed to be only of medium quality. In November, when the specimens ripened, they were remarkably fine. The peculiarly spiced, vinous flavor was particularly agreeable, and could this pear always be obtained in like perfection we would rank it among the richest flavored pears."

APPLES AS FOOD.—In a recent lecture, Dr. Nichols gave some results of analysis of apples, with a view to ascertain their great value as food,

from which it appears that in a bushel of ripe Hubbardston Nonsuch there is about six pounds of soluble nutritive material; in Tolman's Sweet, about seven pounds, and in Baldwin about five pounds, and this material will vary to a considerable extent in value. These results agree with practical experience in feeding apples to animals. When fed in connection with meal they serve to give zest to the appetite, and to keep the animals in health. If cooked their value is much increased.

LA FAMEUSE APPLES.—Though also with another French name, Pomme de Neige, is an American seedling. It is becoming as popular in the north of Europe as of America.

HARDY APPLES.—It is not frost merely, but a combination of peculiar circumstances irrespective of mere temperature, which constitutes hardiness. Even in France, apple trees suffer in winter sometimes. They have also to get up their lists of extra hardy apples. In a list of these, "French Iron clads," we see the names of our Baldwin and Roxbury Russet.

PEAR GROWING IN THE WEST.—Those who have been taught that it is useless to try pears in the West may take comfort from the following, which we take from an essay by Mr. B. O. Curtis: "I have three trees of the Seckel, thirty-one years old, large, fine trees. One is a dwarf now with strong pear roots, and is two-thirds as large as the Standard. These, and a row of young bearing dwarfs are healthy and sound; only one of the standard trees has lost a few branches by blight."

CROSSING PEARS.—The probable crossing, by accident, of the common pear with the Chinese Sand Pear, which has given us the Le Conte and the Kieffer, only shows what may be done when we go deliberately to work to improve the pear. Mr. Barber, in the *Lancaster Farmer*, recommends that we drop this accidental plan. "It would be better not to depend on bees to carry the pollen as they may take pollen from the poorest pears, but by opening the flowers on a Chinese, and carefully removing the pistils before the pollen is ripe, and then with a camel's hair brush take the pollen off of a flower of a superior variety, and apply to the stigma of the one you wish to impregnate, you can hardly fail of success, and a new and superior class of pears will be the result."

RED BIETIGHEIMER APPLE.—A colored plate of this German variety is given in the *Canadian Horticulturist* for April. It is represented as four and three-quarters inches wide, and three deep, bright red, striped with crimson. It is said to be the largest and handsomest apple under culture, and is in season from October till February.

YORK IMPERIAL APPLE.—When a fruit once becomes widely scattered, it achieves popular favor, simply because people know no better. In the olden time, it was the fashion to take votes at Pomological meetings as to the best varieties, and hundreds of people voted on the best they knew. No new and superior variety could get votes in this way. To-day there would be many votes on apples that would not include the "York Imperial," but the vote would only prove that it takes time for superior varieties to become well known.

ENSILAGE IN MEXICO.—The drawing of Mexico and the United States closer together than ever, by means of that iron bond of universal friendship, the railroad, renders everything our neighbors do of more than old-time interest to us. We note from their magazines that, notwithstanding their favorable climate for stock-raising, the question of ensilage is having a great interest for them. The *Boletin de la Sociedad Agricola Mexicana*, gives minute directions for the culture of our Rhododendrons and Azaleas in Mexico.

FUNGUS ON THE FAMEUSE.—The most profitable Canadian apple, the Fameuse, is said to suffer severely in Canada, from a black fungus spot on the leaves.

SCRAPS AND QUERIES.

BRICE'S EARLY PEACH.—Chas. Black, Hightstown, writes: "I send you a box of peaches—Brice's Early. They were picked from trees set two years ago the past spring, and had on about one-half bushel each; although they are of the same class as Amsden, &c., they are the finest of any of the early varieties we have fruited, and we have Amsdens, Alexandre, Downing, Saunders, Wilder, Waterloo, and Briggs' Red May. You will observe that they are more oblong than most of the early peaches. They ripen about the same time as the above varieties."

[The fruit reached us in good condition, the flesh quite firm though fully ripe. The specimens weighed about 2¼ ounces each, the best 3 ounces, and in circumference were 6 inches. On the exposed side the fruit is of a dark brown color, and nicely mottled on the other. It is a juicy clingstone peach and of good quality.—Ed. G. M.]

FORESTRY.

EDITORIAL NOTES.

BLACK BIRCH.—The Toronto *Globe* says: "Black birch, which is rapidly coming in favor, is a close-grained and very handsome wood, and can be easily stained to resemble walnut exactly. It is just as easy to work, and is suitable for nearly, if not all, the purposes to which black walnut is at present applied. Birch is much the same color as cherry, but the latter wood is now very scarce, and consequently dear. It is difficult to obtain cherry at fifty dollars a thousand feet, while birch wood can be had at any saw-mill at one dollar per thousand feet. When properly stained, it is almost impossible to distinguish the difference between it and walnut, as it is susceptible of a beautiful polish equal to any wood now used in the manufacture of furniture. In the forests throughout Ontario birch grows in abundance, especially if the land is not too boggy. There is a great difference in the wood of different sections. Where the land is high and dry the wood is firm and clear; but if the land is low and wet the wood has a tendency to be soft and of a bluish color. In all the northern regions it can be found in great abundance, and, as the tree grows to such a great size, little trouble is experienced in procuring it in large quantities."

[The Birch referred to is probably the Betula lenta, which in Pennsylvania is known as the sweet or cherry birch. The black birch of Pennsylvania is Betula nigra, although quite as often known as red birch.—Ed. G. M.]

FIRE PROOF PAINT.—This is said to be prepared as follows: Twenty parts of finely pulverized glass, twenty parts of finely pulverized porcelain, twenty parts of any sort of stone in powder, ten parts of calcined lime, and thirty parts of water-glass (silicate of soda), such as usually found in commerce. The solid elements having been powdered as finely as possible and sifted, are moistened, and then intimately mixed with the water-glass. This yields a mass of syrupy consistence that may be employed for painting, either alone or mixed with color.

THE WHITE PINE.—Respecting the white pine, Professor Sargent says: "The entire supply growing in the United States and ready for the axe, does not to-day greatly, if at all, exceed 80,000,000,000 feet, and this estimate includes the small and inferior trees, which a few years ago would not have been considered worth counting. The annual production of this lumber is not far from 10,000,000,000 feet, and the demand is constantly and rapidly increasing."

As the white pine is one of the most rapid growing of all the coniferæ, it should not be lost sight of by those who are considering profitable forest planting.

THE LARCH IN EUROPE.—The young wood of the larch is not durable. The wood of the maturer tree is that which gave the larch its good reputation. It is very subject to a disease which browns the tips of the leaves while the tree is growing. When it once gets this disease it seems to hold on to the tree through life, and the timber is much affected in durability. There is some talk in Europe of trying the Japan larch, Larix leptolepis.

TIMBER UNDER BRITISH CONTROL.—Britain is not yet suffering from a dearth of timber. According to recent figures the total extent of the forests in the British possessions is 340,000,000 acres of timbered land.

VALUE OF THE MESQUITE.—The mesquite, so prevalent in west Texas, a species of locust, furnishes good fuel and contains a larger quantity of tannin in its wood than oak in its bark. It, however, is of low stature, hardly reaching more than twenty feet in height, and ordinarily not more than one foot in diameter.

THE VALUE OF TIMBER.—The Florida *News* pertinently asks and answers: "What is timber worth? Nothing, unless your are near a saw-mill. The timber here is very fine, but thousands of acres are being cut down to rot for the want of facilities to work it up and transport it. A saw-mill is next to a full bearing orange grove."

VALUE OF CROOKED TIMBER.—When it is convenient to convey timber to places where ships are built, crooked timber is even more valuable than any other. But there are many uses for "natural crooks" on the farm. A bent timber as

a brâce, etc., is often convenient in a barn, or other out-building. By the use of crooked timber a frame may be made much lighter and more durable than where only straight logs are used. There are many implements in which crooked timber is best, as the knees of wood sleds, stone boats, etc. The farmer should study to use a natural bend in a tree whenever an opportunity offers.—*American Agriculturist.*

THE AMERICAN PLANE OR SYCAMORE TREE.—At the Montreal Forestry Congress, Mr. Caldwell, of Cincinnati, said:

"The monarch of our forests is the sycamore tree. It is a rapid grower and not destroyed by insects. I am indebted to 'Zadok Cramer's Navigator,' published in 1808 at Gittsburg, Ga., for facts which would be incredible if I had not seen the enormous sycamores, which, however, I did not measure. I have seen a section of a hollow sycamore tree used as a smoke house to smoke meat; another as a bin to hold grain; another as an ash-hopper to catch ashes; another as a well-curb. This tree grows near the water courses and does not thrive so well elsewhere. The 'Navigator' named above says: 'It is known to have measured sixteen feet in diameter, four feet from the ground, and this only a common size. One has been known to be sixty feet in circumference. In the hollow of another a man turned himself around with a ten foot pole, at right angles to his body, sweeping inside the tree. On the farm of Mr. Abram Miller, in Scioto county, Ohio, is a hollow sycamore tree, into which thirteen men rode on horseback on the 6th of June, 1808; there was room for two more; the fourteenth was present, but his horse would not enter the strange apartment.' I say, further, this tree is valuable for housebuilding and for cabinet work, but it is not the most valuable."

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

THE MAPLE SUGAR CROP.

BY W. F. BASSETT, HAMMONTON, N. J.

In reply to your correspondent's queries I would say: Yes, there is always sap in the trees, but certain conditions are necessary to make it flow. The principal requisites are freezing and thawing, but a good "run" of sap must be the result of a combination of favorable circumstances. The best runs occur when, immediately after a snow storm, or a rain which is followed by a freeze, we have warm weather with wind southwest or northeast; and it often runs pretty freely with wind northwest or east, but never with wind south; and if any considerable time intervened between the storm and thawing weather, especially if accompanied by drying winds, we rarely get much sap—almost the only exceptions being when very damp southwest or northeast winds accompany the thawing out. Now if we have cold dry winds for several days after each storm, or if nearly all the thawing is done by south winds, there will be very little sugar made. It seems to make very little difference whether winter sets in with the ground frozen deeply or snow covers it with no frost in. I have known very good and very poor sugar seasons to follow either.

EFFECTS OF CROSS-FERTILIZATION ON FRUIT.

BY B. J. C.

An opinion seems to be gaining converts among some careful observers of facts, which seems at first view to have a very narrow basis to rest upon, and indeed, quite at variance with all of our preconceived notions, in regard to the phenomena of reproduction in the vegetable kingdom. I allude to the opinion, which I have lately heard advanced more as a statement of observed fact than expression of opinion, that cross-fertilization not only modifies the characteristics of the progeny resulting therefrom, but that the size, appearance and other qualities of the fruit produced during the season of impregnation must and will, in a greater or less degree, exhibit some of the qualities of the staminate parent, as well as those of the one bearing the fruit. For example, the fruit of a strawberry, of a pistillate variety, growing near a given staminate one—by the aid of which the greater

portion of the crop is produced and perfected—will show a marked difference in size, appearance and quality, from that of the same variety of plant growing near and impregnated by another staminate variety.

This sort of collateral inheritance of qualities, has always seemed to some of us wise ones as not only an impossibility, but the idea so much of an absurdity, as scarcely to merit denial. But, I think a little reflection upon one or two of the primary and well-known laws governing the matter of reproduction by seed, will convince any unprejudiced mind, not only of the possibility of such collateral effects of impregnation, but of their extreme probability, not to say certainty.

These laws are, first, that the fertilization of the seed is a necessary condition to the formation of the fruit, as when there is no impregnation of the seed either from the pollen of the fruit-bearing plant itself, or from a neighboring one, no fruit can be developed. Secondly, that the seed, after impregnation, excites and stimulates by the power of the reproductive principle of life imparted to it by that impregnation, the development and growth of a matrix of fruit to suit its own requirements; to feed upon and perfect its own growth and maturity until it is in condition to return to the soil as the embryo of a new plant. Now, in view of these indisputable facts, is the conclusion not irresistible that, taking for example a bed of a strongly pistillate variety of strawberry—that portion of the bed lying near to and consequently largely influenced by impregnation from a staminate variety bearing large, fine, highly colored or high flavored berries, will bear fruit, partaking to a marked degree more of those qualities than another portion of the same field, coming under a like influence from staminate plants bearing a smaller and meaner class of fruit? This would seem a matter of easy determination, and one well worthy of careful experiment, not only by those engaged in propagating for new and improved varieties from seed, but by those as well who grow for market purposes.

HOW THE YOUNG PLANT STARTS INTO LIFE.

ABSTRACT OF LECTURE BY PROF. J. T. ROTHROCK, FAIRMOUNT PARK.

There are two kinds of young plants—those which are produced from a seed containing an embryo, and those which come from a spore which has no embryo. Young plants start in life from various positions, those on the soil being most common. Then others utilize living trees as a starting point, either to lie there as air plants, like so many of the gorgeous orchids of tropical regions, or like the parasitic mistletoe of the temperate region; the former simply finds a resting place, the latter sends its roots down into the tissues of the supporting plant and lives upon the partly-prepared juices of the host plant.

In California there is a group much like the Mistletoe: the Phoradendrons, which expel their glutinous seeds with force enough to lodge them on the neighboring pine branches, where, held by their viscidity, they grow and send their sapsucking roots down through the bark into the cambium layer of the pine.

Among lower plants, those which come from spores, were found many fungi which live on decaying or on healthy vegetable or animal matter. Among the rarer of this kind were the Torrubias, which grow out of and kill living insects or larva. Some instances of this kind were very striking. The foot disease of India is now well known to be due to attacks of a fungus much like our common bread mould. The spores of this fungus, which is very common in India, find a resting place on the skin of the human foot. They there grow deep into the flesh until this and the bones become a diseased mass, full of canals and round cavities. Even the bone is filled with round holes where the fungus flourishes until nothing but amputation above the ankle can save the sufferer's life.

Lichens grow on trees, earth and rocks. Sometimes the same species is cosmopolitan, in temperate regions. Thus growing on the trees in West Chester the lecturer found a little yellow lichen. He found the same species growing two hundred feet up in the air on the spire of the Strasburg Cathedral in Germany; and later the same species was sent to him, growing on the bleached lower-jaw bone of a human being which was found on the dreary shores of the Arctic Ocean. This the lecturer exhibited. The manner in which, from a single spore, many moss plants may be produced was next explained and illustrated.

How the ferns grew from spores into a prothallus, and from this, by asexual generation, the fern came, was also illustrated. The fern fed upon the prothallus out of which it grew, in a manner that called to mind the pelican, which was said to open its breast to feed the young on its own blood. The Lemna or Duckweed, a floating water plant, hardly more than a quarter of an inch in diameter, contained within the parent plant, at one time, three generations of young plants, which, toward

autumn, were liberated, ready for the growth of the ensuing spring.

The whole process is readily observed by putting some fine mud in an open fruit jar, filling the jar with water, and placing it in a warm, sunny window, and then dropping a handful of the lemna in to grow.

The lecture closed by a statement showing how, from the embryo, the flowering plant started in its career of growth.

EDITORIAL NOTES.

POSSIBLE IMPOSSIBILITIES.—It is interesting to note how many things once thought by intelligent people to be impossible, have nevertheless come to pass. It was once demonstrated to the entire satisfaction of mechanical engineers, that no steamboat could ever 'cross the Atlantic, because the ratio of coal to bulk was thought to be against the distance. Now we have the impossibility of crystalizing sugar from Indian corn and other things, tolerably well solved. Of this, in a recent address before the Massachusetts Horticultural Society, Hon. Marshall P. Wilder spoke of the possibility of producing sugar in quantity from sorghum on our own soil, in which he fully believed. It has been stated that sorghum sugar cannot be crystallized, but it is now a settled fact that it can.

PRACTICAL DIFFUSION OF AGRICULTURAL SCIENCE.—An intelligent correspondent of the St. Louis *Rural World* remarks, that "most farmers know that the persistent defoliation of a weed or a tree will result in death. Did they not so believe they would never strike a blow with a hoe, nor persistently fight the canker worm. The trimming or pruning of shade trees (and often of orchard trees also) in public parks or along the highway, is not done or ordered by experienced gardeners or horticulturists, but by officials who know no more about vegetable physiology than they do about the North Pole. This ought not so to be, but, unfortunately it is so."

To our mind they hoe, because they want to destroy the plants "root and branch." If they know generally that the persistent destruction of young leaves before they mature will destroy the most inveterate rooter among weeds, we have been very unfortunate in not meeting such intelligence. Not only from among "most farmers" do we find comes the imploring question, "How to kill Canada thistle?" and other weeds, but we have heard it asked in agricultural conventions and Boards of agriculture, with usually the only answer, "to root them out by law,"—"fining the man who grows them," and indeed, we have rarely heard taking the young leaves off suggested—and when we have, have seen the same "good farmers" come back and ask the same question of the "convention" the next year.

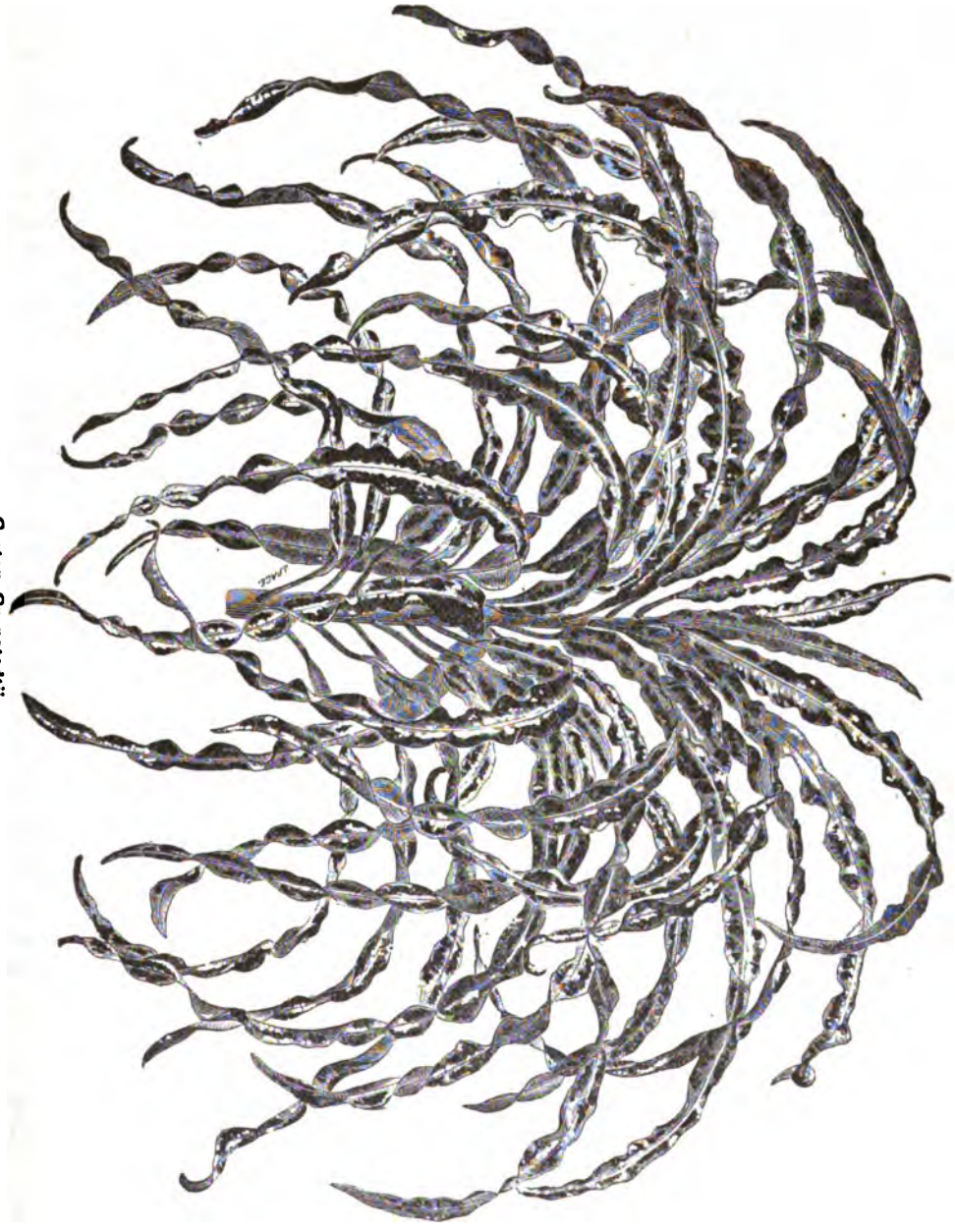
CAMASSIA ESCULENTA VAR. LEICHTLINII.—Our Western "Quamash," a pretty prairie bulb, has presented us with a new variety from the Pacific coast, of which the *Botanical Magazine*, after figuring, says: "It was discovered by Mr. John Jeffrey in British Columbia in 1853. As a garden plant my first knowledge of it was derived from our indefatigable correspondent, Max Leichtlin, Esq. The present sketch was taken from a plant which flowered on the rockery in Kew Gardens in May, 1873. The ordinary color of the flowers of C. esculenta and of C. Fraseri, its representative in the Eastern States, is blue, but in all the specimens which I have seen of the present plant the flowers are white."

BAD SETTING GRAPES.—Self-fertilization is common, but it is not universal; for any one examining the flowers of vines will find that when the cap of petals falls off in the way described in books and the pollen is dispersed, that the stigma is not receptive, and so any pollen that falls upon it is powerless. Again, the dispersal of the pollen is as likely to produce cross-fertilization of adjacent flowers when others are grown in proximity as it is self-fertilization. The different times at which pollen and stigma ripen, and the occasional absence or defective condition of the pollen, are among the most usual causes of shy setting. This deficiency of pollen we have noted in Dutch Hamburgh, Black Morocco, Balafault, Muscat Noir du Jura, Aramon, Morocco Prince, and Chasselas Musqué, but how far this is a common occurrence we do not know.—*Gardener's Chronicle.*

ADAPTATION IN NATURE.—Of late years it has been the fashion among a class of ingenious minds, to see in every variety of form in nature, some reason derived from an innate necessity, why the form should be just so.

It has however seemed to the Editor of this magazine, and he has presented the point from time to time, that there can be no more reason derived from "advantage to the plant" in one class of form over others, in innumerable cases. Take for instance, the various forms of leaves

among the numerous kinds of ornamental Crotons under cultivation. They all thrive equally well under precisely the same conditions. This consideration presents itself strongly, when examining this very pretty species, introduced to our greenhouses by the celebrated firm of James Veitch & Sons, of Chelsea, London. Many of these plants have broad and flat leaves—here in this, Croton Cronstadtii, the leaves are narrow and twisted like screws. Though we cannot fathom the law of its existence, except that we may say it is necessary to nature's purposes that there should be variety—one might perhaps go further in a plausible guess, and say that nature also loves to make things beautiful, as we believe is the idea of the Duke of Argyle, a gentleman of no mean scientific standing.



Croton Cronstadtii.

At any rate, this species is one of the most beautiful in this very beautiful family.

FRUITING OF THE CALYCANTHUS.—In the wild state some of the plants of the "sweet-scented shrub," or "Carolina Allspice," of gardens, vary much in prolificacy. Some are entirely barren, and others bear fruit profusely. For many years a barren form was propagated by offsets in nurseries, and this gives rise to the impression that it rarely seeds.

A DISEASE FROM REEDS.—A curious affection has been occasionally met with in certain parts of France, especially in Provence, among reed workers, chiefly those who manipulate the stems of Arundo donax. A case at Frontignan has lately been very carefully studied by M. Baltus, of Lille. A man, aged forty-seven, and his son, aged seventeen, had been at work for several hours loading a cart with reeds, which had been cut a year before, and kept in a damp trench. Both were seized with a painful irritation of the nose, eyes, and throat, followed by erythematous swelling in the same parts, which extended to the hands and trunk. An examination of the reeds showed that they were covered with a mould consisting of the spores and mycelium of a fungus, Sporotrichum dermatodes, which had developed under the influence of the prolonged exposure to moisture. The spores had been shaken off as dust during the manipulation of the reeds, and had irritated the exposed parts of the skin on which they had lodged. Although usually trifling, the malady may sometimes assume a severe form. It may apparently be prevented by the simple expedient of washing the reeds before their manipulation.—*Popular Science News.*

CROSSING AQUILEGIAS.—As Mr. Douglas has so far been successful in crossing Aquilegias can he not go a step farther and endeavour to cross the single white garden variety upon a chrysantha, in the hope of obtaining eventually a pure white form of that robust and beautiful species? The great charm of chrysantha is that its blooms are so erect and bold, and hence are so much more elegant than are the finest flowers to be found on the garden varieties, as nearly all these are not only deficient in spur, but are drooping. I have the white varieties here, both single and double, but care little for the latter form in any color. There is also a dark blue kind, that might make a good pollen parent. Specially, however, I should like to see the pale straw hue of chrysantha deepened into a rich yellow, as the flowers would then be far more striking than they now are. I must say that, having grown chrysantha, Californica, Mr. Douglas' hybrids, and glandulosa side by side, I have found not the least variation in the seedlings of the former and the latter, whilst Californica has given one form that seems to be brighter and finer than its parent, though the same combination of color is retained. Hence I infer that natural hybridisation is not common, and that to secure crossing artificial fertilisation must be adopted. Would that glandulosa had the habit of chrysantha, as its flowers are so large and so beautiful. In making efforts at cross breeding no doubt the hybridist would be encumbered with a great quantity of seedlings that would show no improvement, but these should be ruthlessly rejected in favor of but one or two that seem verging towards the desired goal. Perhaps also something might be done to make the flowers more enduring, especially when cut. Hybridists must not be frightened from effort because some one will complain that they are only spoiling species. The species, with all their beauties, will remain, but if really beautiful new kinds, having clearer or richer colors and more enduring qualities can be added, so much the better.—*A. D. in Gardeners' Chronicle*

LITERATURE. TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

EDITORIAL LETTERS.

AT SEA, PACIFIC OCEAN, July 3d, 1883.

Water is one of the essentials of Horticulture. Wherever I have been in my travels, water has been the great question. If we only get rain enough—if too much rain does not occur—if our ditches do not give out—if our wells do not become dry—we shall have good crops. Here, where I am writing these lines, on the Pacific Ocean, 48° north latitude, there seems to be too much water. It is water, water everywhere. Once in a while we get a glimpse of a snow-cap, on the far distant

Olympic Mountains; otherwise all is water. There is not a scrap of sea-weed floating on the surface, not a gull or other bird floating around, not a sight of a vessel of any kind now these five days since we have been sailing towards the North Pole,—even the whales which only two days ago disported themselves in great numbers, have apparently gone to rest. It would seem that the only use of this vast water prairie is to bear our ship along; yet to me it has its lessons. Possibly this beautiful world could not do with one ounce of water less. The green fields, the succulent vegetables, the luscious fruits of our Continent owe their delightful character to this same Pacific Ocean. The millions on millions of gallons of water which every living thing evaporates, each gets from the clouds. These myriad millions come chiefly from this ocean. I forget exactly just now, but I think ten gallons per square foot per hour, rise from this mighty ocean in order to make horticulture a certain thing. To say of the ocean that it is a dreary waste of waters is a libel on creation. And the Polar ice, are these gelid sheets also a mighty waste? Just as this mighty ocean is our blessed handmaiden, so are these solid blocks of ice. There is no waste in water or ice. Everything serves us well.

Our Captain Morse said to me to-day, "the Scripture tells us the 'the wind goeth where 'er it listeth,' but it doesn't. It is just as much under despotic law as the motion of the planets. Down at the equator the sun warms the water and warms the air, and these are lightened; a heavier body pushes it out of place, motion begins. The cold air and cold water are heavier than the warm, and it comes down from the north to the south, the warmer going north to get cool and returning when cooled, so that so long as the sun's rays keep disturbing the balance by making the air and water lighter, there will always be a continuous current of water and air going north in one direction and returning in another." Here we have the proof. For five days that we have been on this ocean, wind and stream have been from the north southwardly; on the land the same rule prevails. High mountains surround valleys and the hot sun pours down, lightening the air and making a vacuum and then the heavier cool wind rushes in from the most convenient spot. Captain Morse does not believe in an open Polar Sea. In latitude 80° he has seen the upper strata coming up from the south, sink there and return cooled, without getting any further. "What then do you think," said I, "of the suggestion that the ice is thickest at its outer edge and thinnest at the poles? This is said to be a proof that the air is warmer where the ice is thinnest." "By no means does it prove this," was his reply, "if the atmosphere gives out all its moisture, say at 80° there will be none left for 85°, and the ice and snow will naturally be thinnest there." We shall therefore have to leave the question of the open Polar Sea rest for a while,—only having full faith that whatever may be the case, it is just what we need to make our operations just what they are.

But the water question will still go on. It is the great question of questions with Californians. On my arrival in San Francisco, almost everything was parched and the thermometer 96°, a hot and burning wind came down from the north. This means that it came down over plains already roasted by the sun, instead of being drawn in from the ocean, as it was wont to do. There has been a cool spell in the north and the warmer ocean current had not been drawn in. It was funny to hear the people talk of the scorching north wind, the wind which we of the east receive with such welcome, in our seething days; 96° here however means much worse for vegetation than with us. We have moisture in the air. The air here already dry, is a complete desiccator at 96°. I saw currants as completely dried up on the bushes as if placed under Ryder's fruit dryer; and the leaves of the trees in many cases, turned quite brown. At Hayward's, which is a remarkably extensive fruit-growing region, I hear the estimated loss by the northern wind placed at $500,000. There is however some compensation in all these cases. The fruit grower gets a higher price for that which is left. I was amazed at the health and strength of the currant at Hayward's. The water here is so near the surface that the land is always cool and moist without irrigation. I found here among the fruit-growers proper, two very successful nurserymen, O'Neil and Collins. The former has found by experience that the Myrobalan Plum stock is one of the best for the peach, apricot and plum here. The trouble with the ordinary plum stock is that in this climate, they throw up a forest of suckers. The cherry plum, which is of the myrobalan section, does this to some extent, though not equal to the common plum. The original myrobalan seems to sucker scarcely at all. The cherry plum thrives very well in California, and large quantities are seen in the markets. They are not as good as the regular plum, but their earliness gives them a great place in profitable fruit culture. In the east I have seen the peach do poorly on the

myrobalan stock. At O'Neil's nothing could look healthier, or more promising; apples and pears also were growing one and two years from the bud, I think, finer than any I have seen in the east. At Collins' I think are cherry trees as healthy as I have ever seen anywhere. Strong shoots, fine foliage, magnificent growth—and of course as a result, wonderfully large and luscious fruit. So far as I have seen, the most popular cherries are Black Tartarian and Napoleon Biggareau—or, "Royal Ann," as it is called here. It appears that one of the early distributors read the illegible label, "Royalann" instead of Napoleon,—a very shrewd guess, as any one will see who tries to write the word out, without being very careful of the letters.

There is not much variety of ornamental trees under culture in California; but the great number I saw thriving at Mr. Collins' nursery, shows the variety is only through not knowing what to plant. At Mr. Shinn's, at Niles, were growing also a very great variety of ornamental trees, as well as fruits. This nursery also is not dependent, to any great extent, on irrigation, though water is often applied to advantage. The gopher—as one might say, a cross between a squirrel and a mole—is the great agricultural wretch of California. Several acres of friend Shinn's alfalfa, were well-nigh ruined by the miserable creatures, which, however, seemed happy enough in what was clover to them. But Mr. Shinn was also happy in the thought that he would let in his irrigating ditch on them in the fall, when they, at least, would have water enough and to spare. Mr. Shinn pays particular attention to peaches and apricots, and it was a rich treat to wander among his numerous varieties, and listen to the lessons drawn from his long and intelligent experience. He believes that there is yet room for a much better apricot than has yet been seen in California. The apricot, nectarine and plum are great successes in California, because the curculio has not as yet made its appearance. The general impression seems to be that the climatal conditions are not favorable to its existence, or it would have certainly been seen before this. The traffic between the East and the West has been so enormous that in some form or another it ought to have got across.

The funniest thing I have heard here is about an embargo on Eastern plants and fruit trees, for fear of introducing the curculio—and I believe there is a commission, appointed by the State, to look after the introduction of insects. It does not seem to occur to these worthy gentlemen that the curculio would be much more likely to come in by the earth round a pot-flower in a lady's satchel, or in the cleft of an old log, than by the roots of a fruit tree, or the moss in which it is packed. Still, commissions are profitable concerns in some respects. As Captain Morse says about Arctic explorations, "it is just as well for people to believe there may be an open Polar Sea, and to send expeditions in search of it, though I believe there is no such thing, they find something that pays for all. De Long's discoveries in ocean currents, will pay navigators and students of physical science for all time, though his own life terminated in the search for it, some years sooner than it otherwise might."

Speaking of insects, the codling moth is beginning to be a terror to California apple-growers, as it is to us. The scale insect, in various species, is however the great foe to the fruit-culturist. I have seen orchards that were merely dry sticks—every tree dead! Some however are profiting by the teachings of the GARDENER'S MONTHLY, and use linseed oil. Pure linseed oil painted over the infested trunks and main branches—the smaller ones when infested being cut away—destroys the scale, and does not injure the trees. It is to be remembered that in our part of the world, while large numbers have used oil safely, some have found the trees die after using it; why, has never been understood, except the guess that the oil was not pure. Any light and cheap vegetable oil, ought to be quite as good. If, however, trees are cared for regularly the scale does not seem to get a foothold. On the grounds of the University at Berkeley, I saw an orchard of pears in a state of health and beauty I have rarely seen anywhere. There is no sign of scale, or of any insect on these trees. They happen to be under the care of one of the most intelligent gardeners in the country, Mr. Clay. All he does is to have the stems regularly washed with lye once a year. It was wonderful to see such pretty trees, on a dry hill, and in such a dry climate. And yet, dry as it is, it is not unusual to have orchards pointed out that have suffered from too much rain—peaches especially. From October to May, rain is often continuous. If peaches or other trees commence to grow before the rainy season is over, they suffer, if "hard-pan" is beneath them. In well drained ground they get little hurt.

At San Jose—pronounced here, San O'Say, or O'Zay—which is the great nursery center of California, I found the question, which in some form or another, is the great question of California—water, still the staple topic. Here Artesian wells

are relied on chiefly, to bring a flow of water to the surface. On Mr. Hannay's grounds, water which could once readily be found at three hundred feet had to be brought up from seven hundred feet. At Mr. Rock's, I found him busily engaged erecting flumes, to carry the water across to parts of the nursery, where old-time plans had failed. He had however one magnificent well, which was flowing out on the surface a stream as thick as one's leg. The great increase in the number of Artesian wells, and the turning off of mountain streams, to different directions, by the modern system of hydraulic mining, is necessarily shortening the water supply. The melting snows and rains haye to supply all the water in and upon the earth. That which soaks into the ground appears again in some distant place through the rock fissures, in the shape of springs; the other comes over the surface as torrents, or mountain streams. There is reason to believe that that which soaks in and forms the under-ground streams, or springs, is far less than that which flows over the surface as rivers or streams—that is, in the higher elevations from which artesian water springs. It is easy therefore to calculate just how much water there is at the disposal of this system, and to understand how limited the supply must be. The San Jose nurserymen all speak very highly of the business of the past year or two, and very encouragingly of its future prospects.

On the grounds of General Naglee, of San Jose, I saw one of the most beautiful specimens of the mammoth tree I have ever seen under culture, or indeed anywhere. They are not pretty in a wild state, and I have now seen all the groves—Mariposa, Calaveras, and all. But I had better stop. It is not easy to write under the influence of the pitch and toss of an ocean steamer, and four-fifths of your fellow passengers begging to be tossed over-board, as the best remedy for sea-sickness. I tell them it is all imagination, that if they would believe as I do, that there really is no such thing, they would never have it. But the world has always been punished for unbelief.

As we shall probably touch at Victoria, B. C., to-morrow morning, I will close this on the chance of getting to mail it. My next may be from Georgian Bay.

II.

CHATHAM SOUND, Pacific Ocean, July.

I do not know when I have been more agreeably surprised than by a visit to the town of Victoria, which is on the south-east point of Vancouver's Island and between latitude 48° and 49° in the North Pacific Ocean. We had been for some days sailing on the Pacific and along the Straits of San Juan de Fuca, the heavily snow-capped mountains of the Olympic making the air so chilly that those who kept in the open air at all had to do so with overcoats, or, if ladies, in warm wraps or furs. All at once we came to the mouth of Puget's Sound, opposite to which is Victoria, and all was at once pleasant. Summer weather, and everything as lovely and beautiful as the prettiest poet might imagine. The harbor of Victoria is, however, small and shallow, and as a consequence, our heavy vessel had to lie for six or eight hours a mile and a half waiting for the tide to rise, and this gave me the opportunity to do some interesting botanizing among the rocks along the coast. One of my first surprises was to find the Siberian crab-apple, Pyrus baccata, indigenous here.* Perhaps it is recorded in our botanical works as indigenous to the North-west as well as to Russia; but I do not remember it, and have no work to refer to in the place where I am writing this, which is off the mouth of the Skena River, emptying into Dixon Sound. It must be the dwarfest form, possibly the one known in nurseries as the Paradise stock, for it trails over the rocks, making in some places a sort of thick lattice work ten or fifteen feet square. Some of the plants I saw had stems coming up from among the crevices of rocks three or four inches thick, and yet, by their shaggy appearance, must be very old.

The town of Victoria, which we reached in the afternoon, is an indescribably pretty place. It is built on a high rocky bluff, and has a park called Beacon Hill, from its use in signaling in those olden times when Indians were troublesome. At present this hill is simply preserved for public use—drives only being led around it for carriages and horses, and "the poor man's cow" having free privilege to roam wheresoever she wills. The fern of the Old World, the common Brake of

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* Since the above was written the writer has little doubt the apple referred to was the Oregon Crab, and not a form of the Siberian. On his return from Alaska, later in the season, he found the Oregon Crab on the shores of the Columbia River, with the fruit advanced and with the leaves in the almost Hawthorn-like condition proper to that species, instead of in the weather-beaten form of the plant on the shores of Vancouver's Island. The references to the use of this form as a dwarf stock for the apple will, however, still apply to the Oregon Crab. It may be interesting to add that the Oregon Crab was found as far north as Sitka—some trees near there being twenty feet high and with small trunks two feet round.—Ed. G. M.

England and Bracken of Scotland, is indigenous here also, and grows to an enormous height—in some cases completely hiding the cattle from observation. Along the Yosemite I saw horses and cows feeding on this fern apparently with relish, but here they carefully picked out what they could get among the fern, and left these untouched. I made a note of this as another of those curious cases where two people might take opposite sides in an argument, and yet both be right. The population of the town is said to be eight thousand, but a large proportion is made up of Chinese and Indians. Statistics give 30,000 as the number of all the Indians in British Columbia; but I fancy from what I have seen that there must be much more than this. A Victoria gentleman told me that he believed there were 20,000 within easy reach of the settlements. They have in most part adopted the habits and methods of Europeans, live together, work together, and to a great extent intermarry. The better class of Indians are very neat and tidy in their clothing and habits, and those who work for hire make excellent laborers. Chinamen, also, are in good demand. I was surprised to find how high labor was. A nurseryman, whose grounds I visited, paid $2.50 for day laborers—$35 and board per month for white labor, and $30 per month and board to Chinese. Everything, however, one buys is proportionably high. A newspaper for which we should pay two cents costs ten. Those who want to live as other people do, get along about as well as people do in other parts of the world; but if a person is determined to save and not to spend, he can very soon get a small capital to start into some business enterprise. But I started to speak of the marvelous floral beauties of the spot. Though the mountain tops some fifty miles away are perpetually white with snow, except when the morning and evening sun lights them up in purple and gold, the air in the town is warm, though without sultriness, owing to the long day's sun (sixteen hours now) warming the sheltered spots where the high mountain ridges keep off the Arctic winds. The people are fond of flowers, and almost every cottage was embowered in vines, and seemed ready to break down with their load of blossoms. In my early life in England I have memories of whole buildings completely covered from roof to the ground with sweet roses and gratefully scented honeysuckles, but I have often found that early memories become magnified. The distance of time lends an enchantment to the early view. I had come to suspect that the roses may not have been quite so strong, nor the honeysuckles quite so sweet, as these early memories recorded them. But here they were even excelling these impressions and giving a new echo to the voices of youth. The tale was true. The wild English honeysuckle, running up by the cottage door, rambling under the eaves to almost gable end, dropping in festoons between the windows, and only by the aid of art permitting a glimpse of the within, and giving out thousands—yes, thousands of bunches of their deliciously scented purple and white and yellow flowers. And the roses, and the Pyracantha, and the evergreen ivy, and the scores of other things which even we in Philadelphia cannot grow without much trouble—here may they be seen climbing in wonderful luxuriance, or making bushes, in some cases, nearly as large as the habitations they adorned. Roses, yes! How they would have charmed the heart of an Ellwanger or a Parsons! How the enormous "Jacks," by the thousand, would have made the purses tremble of those florists who with us only get them to perfection by the lavish expenditure of cash and by the sweat of their brows! The roses! It is wonderful how they do here. Even the standard or tree rose is grown to an enormous extent, and make the same beautiful ornaments in yards that they make in the Old World. And the indigenous rose—Rosa cinnamonea or Cinnamon rose—grows in a state which I may almost call grandeur. I have it growing in my Germantown garden, but about three feet is all the hight it cares to grow for me. Here you may see bushes—nay, masses—scores of feet in diameter, ten feet or more high, and bearing thousands of their remarkably sweet, rosy flowers, giving a fragrance to the air for long distances away. In many instances the Sweet Briar and Eglantine of the Old World had become naturalized, and had got into the fraternal embraces of their native brother; but these also were growing with equal luxuriance, showing that it is the climate which does it all.

When the time shall come that the whole country shall be brought under improved speed in travelling connections, and the United States shall be but a few days' reach from this now distant land, this ought to be the great rose center of the American Continent. Not only the rose, but numberless plants of the Old World have escaped from cultivation, and are making their way through the world, on their own account, most gloriously. The English daisy, the "gowan fine," which Burns tells us of in "Auld Lang Syne," is getting out everywhere among the grass,

and the Furze and the Broom and many others abound in the woods and along the roadsides. In Mr. Johnston's beautiful nurseries I saw the Deodar, and many other half-hardy evergreens with us, growing magnificently, and I have never in any part of the world—not even in its native home at Calaveras, Mariposa, and other places—seen the great mammoth Sequoia so evidently well satisfied with this world as in Mr. Johnston's grounds. These nursery grounds are not very large, but had more variety than I have seen in any nursery since I left home. Apples, pears, plums, and particularly cherries, make a remarkably vigorous and healthy growth, and just now the cherries are breaking down with their weight of fruit. But here, as elsewhere, good culture has to tell its own story. Apple orchards are set out, and then they are left to struggle for food with the grass or other vegetation, and soon get yellow, hide-bound and moss-clotted; and then the owners tell me "the apple is one of the fruits which will not do in Victoria;" but when you come to places where the apple tree has all the ground to itself, or, having other things growing with it, is still manured enough for both, then you see that the apple will do as well as elsewhere. And what a country for the cooler-loving fruits and vegetables! The common currant grows five feet high and bears fruit as large as the cherry or Versailles. And such cabbages, lettuce, peas, and so forth, few, if any, of our readers ever saw. I almost felt that I could remain here, but when I remembered the grapes, and watermelons, and tomatoes, and scores of other things which we have and they may envy, I shall feel free to return as happy as when I left home.

I hurried to finish this, so as to leave it at some British settlement we might touch at on the road, but I find that on some Custom House or International law we must not land on British soil, so I must save it for mailing in some Alaskan port—probably Sitka or Fort Wrangel. T. M.

UNDER THE SASHES AND UNDER THE SOD.

BY WM. T. HARDING, MOUNT HOLLY, N. J.

Those who are supposed to know best about such matters as the writer frequently discusses in these pages are apt to dissuade lovers of floriculture, with less zeal than prompts your correspondent, from exploring the exotic wonders of plant-life, in their adopted habitats under the sashes, while the scorching, sultry atmosphere of hot July prevails. And, no doubt, many are deterred from so doing on that account and consequently miss many a pleasing scene. But as life is too short, and at best uncertain, I fully determined without further procrastination, on the 26th ult., to visit the well-known nursery and greenhouses of David Fergusson & Sons, Ridge and Lehigh avenues, Philadelphia. Alighting from the Ridge avenue passenger cars, which pass close by the nursery gate, I was at once among the many glass structures which have from time to time there risen up since it was my last privilege, years ago, to view the establishment. At that time I was accompanied by my esteemed friend, the late Mr. Fergusson, an honest man, in whom there was no guile. Happily, the honored father left the nursery in charge of his two enterprising sons—who commendably tread in their sire's footsteps. And the same hospitable roof under which I was kindly entertained, with one exception shelters all of the same happy family.

Although it was what is usually called the dull part of the season among the followers of floriculture, yet business seemed to be brisk with them. Several of the active hands were busily engaged packing up a large order of choice roses, for a well-known nurseryman in Maryland. And of the family of Rosa, the queen of flowers, which is both numerous, healthy and beautiful—there are vast numbers grown in pots, for convenience of shiping with safety to all parts of the country, at any time or season. A large square of finely grown plants of the same kind were flourishing outside, for potting later on. These were as beautiful as roses could well be. Adjacent to the rose-house was a large forcing-house, for the culture of young grape vines of the Muscat and Black Hamburg type; and more vigorous, or cleaner grown vines would be difficult to find. As growers of foreign grape vines the Fergussons have long been famous; and as there seems to be a steady demand for good thrifty vines, it indicates the increasing favor good, luscious grapes, when grown under glass, are at present receiving. And near to the propagating house is a fair sized grapery, showing an excellent crop of fruit, which is kept more for the purpose of growing wood for propagating the various kinds, true to name, than for the fruit produced. The native, or hardy grape vines, of which all the popular varieties are grown, seemed to vie with the foreigners for superiority of growth.

Leaving Pomona's locale, I turn again into Flora's domain, where her august presence gently hovers

around, among gorgeous foliage and beautiful flowers. It will be futile to attempt to describe the marvellous effect of such a multiform assemblage of choice plants as are here presented in the many well filled glass-houses. So I will single out but a few of the most conspicuous. And what can be more so than the regal Croton Queen Victoria? Among this superb collection C. Earl of Derby seems to be the most singular of all; then comes a group of Dracenas, with D. Goldieana and D. Guilfoylei, as principal representatives of this brilliant tribe of tropical plants. Next to describe are the peculiar foliaged Caladiums, whose rich and many colored markings are very attractive. C. Chantini, with its rose and crimson banners, though somewhat old, is still as beautiful as any of its younger compeers.

Among a cabinet of exquisite leafy gems, none looked more lovely than the little Bertolonia Van Houttei, so grandly spotted. B. marmorata with its glittering golden stripes, and Sonerila margaritacea, S. argentea, and S. Hendersonii, with its beautiful maculation and rich variegation were also good, and altogether defy my powers of delineation. And the same may be said of Fittonias, Echiteses, Anthuriums, and such-like pretty things. And similar remarks apply to the handsome Marantas, than which there is nothing more effective among remarkable foliaged plants.

Conspicuous among the many flowering plants were Gloxinias, Eucharises, Begonias, Gardenias, Abutilons, Fuchsias, Jasminums, Torenias, Pelargoniums, Petunias, double and single, of which a set of twelve were remarkably handsome. But the many interesting flowering plants with which the houses were made most pleasant to ramble through, are too numerous for special notice.

Ferns and mosses, always attractive, were as delicately beautiful and graceful as they always are. The collection of Orchids, though not so numerous, was very good. There were full ranks of noble Palms, so striking in tropical scenery, and so necessary in the decoration of the hot-house, greenhouse or conservatory. The stock (groves I might say) of thrifty Camellias, was both great and good; over which some magnificent specimens reared their shapely forms above the many thousands around. And a mass of Azaleas were equally good.

The contents of the large rose-house, in which the roses for winter forcing are planted in well prepared borders, are as healthy and vigorous as it is possible for them to be. Immense quantities of plants for bouquet and decorative purposes are grown indoors and out.

Tempted as I am to continue, I must nevertheless close the pleasing subject, and for a moment turn to sadder scenes. But a few steps from the nursery to the cemetery close by, brought me to where Mr. Robert Buist, my first patron on this side the sea, calmly rests, "after labor's long turmoil," in the narrow house of clay. As I gazed upon the green sod, where side by side, husband and wife serenely slumber, I was forcibly reminded of the past, with the poet's words:

> "Sweet memory, wafted by the gentle gale,
> Oft up the stream of time I turn my sail;"

and think of what occurred happily, or otherwise, "In the days Auld Lang Syne."

Passing by poor Fechter's resting place, who "after securing the world's applause," there "sleeps the sleep that knows no waking," I was shocked at the neglected condition of his burial lot. Rank weeds almost hid the striking bust of the late lamented dramatist, who was well favored with appreciative smiles and fragrant flowers when living and acting his part as a man and a brother.

NEW FACTS WANTED.

BY N. ROBERTSON, SUPT. GOVERNMENT GROUNDS, OTTAWA, CANADA.

It is often tiresome to wait for the ending of controversies, in horticultural papers. There is often so much written that it becomes confusing to decide which writer's views to take. The MONTHLY has the least disposition of any paper, to allow this sort of thing to go too far. Steam heating has had the most freedom of its pages of anything I have ever noticed. No doubt it is a subject embracing a very wide range of thought, requiring much explanation. Like all newly introduced things, it has always old practices to contend with, which to many, appear as if they could never be superseded.

Take the grape-vine as an instance, page after page will be taken up with the various methods of pruning it. There is too much writing, and the ideas expressed are too few to be satisfactory to the amateur. To practical men the difficulty will be less, because they get at the practical parts of the article quickly, and are better able to grasp them; but to the less experienced in such matters it is most confusing. I would never think of curbing any reasonable discussion, for this often brings to the surface many sound, practical points. But

when parties are allowed to spend weekly, one, two, or three pages for the course of a year over the name of a plant and its origin, as has been done in England, over the Helleborus niger, it is neither pleasing nor instructive. Is it worth so much to find out if it should be called St. Bridget's Christmas Rose, or any other name, or from whom it originated? Take again the rose; what letters have been written on it! Yet how rarely are any new ideas expressed.

What I would urge on writers is to consider whether there is a newness about what they propose to write. Fresh facts may often be had by looking aside from trodden paths, and they will often find something there to interest many readers.

LANDSCAPE GARDENING APPLIED TO CEMETERIES.

BY C. M. HOVEY, BOSTON, MASS.

I have read, with deep regret, of the death of Mr. Adolph Strauch, of Cincinnati Garden, and Superintendent of the Spring Grove Cemetery since 1854, and to whose excellent taste and skil its beauty, so generally recognized, is undoubtedly due. But I was much surprised to read in the report of the cemetery committee, upon his decease, that "Mr. Strauch originated the landscape lawn system for cemeteries, gradually developed its important details, and demonstrated its superiority." There could not possibly be a greater error, and no greater injustice done to the memory of one who was not only the first, but who has done more for landscape improvement, the advancement of arboriculture, or the progress of rural adornment than all others.

I scarcely need refer to the late J. C. Louden, who died long before the Spring Grove Cemetery was established, and more than ten years before Mr. Strauch took charge of the grounds. Two years before his death, in 1842, he described the "Principles of Landscape Gardening and of Landscape Architecture, applied to the laying out of public cemeteries," (Gard. Mag. Vol. 19, p. 93) and even before that the South Garden Metropolitan Cemetery had laid out their grounds in landscape style, a fine representation of which, in a lithographic plate, may be found in the same volume, p. 402.

Mr. Straach is undoubtedly entitled to all the praise that the committee (of which our old friend, Mr. Probasco, is chairman) for what he did to give Spring Grove Cemetery its charming character. He was no originator of the system, but had the good judgment to accept of what had already been done, and do as much as he could to perfect what those who did originate it endeavored to accomplish.

EDITORIAL NOTES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

THE EDITOR'S JOURNEY.—The trip of the Editor to the west and north-west embracing in geographical lines some 12,000 miles, was a particularly delightful and instructive one, rendered still more pleasant by the kind attentions of friends. Along the Pacific coast his journey took in a large number of points between latitude 36° and 60°, the mouth of the Chilcat River in Alaska being the highest point reached, and where botanical collections were made at half past ten o'clock at night! Especial acknowledgements of friendly services are due to Mr. Henry Shaw, of St. Louis, Mr. John Reading, of Salt Lake City, Mr. Fox, of San Jose, Mr. O'Neil, of Hayward's, Mr. Shinn, of Niles, General Bidwill, of Chico, Mr. Hutchings, of Yosemite, Dr. C. C. Parry, Dr. Kellogg, and other members of the California Academy of Sciences, (who kindly took charge of the plant collections while the Alaska trip was being taken), Mr. Thomas Meherin, of San Francisco, Mr. Philip Ritz, of Walla Walla, Washington Territory, Mr. Clarke, editor of the *Willamette Farmer* Portland, Oregon, and very particularly to Mr. Ed. Wickson, editor of the Pacific *Rural Press*, who amid the very arduous tasks of editing such a popular weekly paper, found time to do a very great deal towards making the California part of the journey instructive and delightful. In striking contrast with the rude boorishness of the officers of Oregon Steam Navigation Company in San Francisco, may be mentioned the gentlemanly courtesy shown by the company's agents in Portland, Oregon, who spent nearly a day in successfully getting justice done through the careless indifference of the San Francisco officials; and especially are thanks due to Captain Carroll, and Purser Downing of the "Idaho," on which vessel the

Editor spent four weeks very delightfully. If any one should be tempted to follow the Editor's example, and take a trip to this great northern wonderland of America, he will be particularly fortunate if he gets on the "Idaho," and into the hands of these courteous and genial gentlemen.

It may added that though much of the matter for the MONTHLY had supervision before the Editor's departure, credit is due to his brother Joseph, for the careful superintendence given the three months numbers which appeared in his absence.

DR. JOHN A. WARDER.—We were pained to learn on the return of the Editor from the West, of the death of Dr. John A. Warder, which occurred at his beautiful home at North Bend on the 15th of August. He was in his seventy-second year; but so great was his sprightly cheerfulness on all occasions that few would have taken him for one of so great an age.

Few men in the East have done more to awaken an interest in horticulture than Dr. Warder, and in in the West no one has probably done as much as he. He was a Pennsylvanian by birth, and connected by marriage with the well known families of Cope and Haines, which have done so much for the intellectual reputation of Philadelphia, especially in connection with the Philadelphia Academy of Natural Sciences of which Dr. Warder remained a member to the day of his death. He went West early after marriage, and practiced medicine with great success, abandoning it for rural life at North Bend, above Cincinnati, in 1855. In a literary way the writer's first acquaintance with him was when he undertook the editorship of the *Western Horticultural Review*, which appeared about the same time with Downing's *Horticulturist*. There seemed no room for another purely horticultural magazine at that time, and Dr. Warder's venture was comparatively short lived, but it had a wonderful influence on the horticulture of Cincinnati; and at that time, in connection with the Cincinnati Horticultural Society which Dr. Warder did so much to sustain, Cincinnati became with the Boston and Philadelphia Societies among the great leaders of horticulture in the United States. The wide spread progress made in strawberry culture during the past quarter of a century owes much to Dr. Warder in the Horticultural Review, and the Cincinnati Horticultural Society. In 1858 his work on hedges appeared, which is still the chief reference book on this subject. In 1867 Warder's Pomology came out covering however apples only. It is the nearest attempt to place the descriptions of fruit on a scientific basis that has ever been made. The limit of characters was too narrow. There was not enough allowance made for possible variations from climate or soil. In our mind it always seemed a wonder the Doctor did not go on and perfect his method. It will always stand as the best advance ever made by a single author on scientific pomology. As a botanist as well as an author he has done valuable service. He was the first to show that there were really two species of Catalpa in this country, and to suggest for the Western form the name of C. speciosa, eventually adopted by Dr. Engelmann the describer of the species. Whatever good may come from the recognition of the arboreal merits of the Catalpa, will be mainly the work of Dr. Warder.

In brief there is scarcely an agricultural, horticultural, forestry, pomological or scientific society in the United States which will not directly or indirectly miss Dr. Warder, and his name will long stand prominent in the annals of American intellectual progress.

H. B. ELLWANGER.—While our readers had before them Mr. Ellwanger's paper on the Manetti rose, which appeared in our last issue, its talented young author was then on his death-bed. He had been down for some weeks with typhoid fever, to which he succumbed on the 7th of August; being then in his thirty-third year. In the nursery business there are so few which take to the pursuits of their fathers in an intelligent way that the death of one like this is more than a usual loss to the horticultural community. Mr. Barry's son William, and Mr. Geo. Ellwanger's son, the subject of the present note, promised to continue long after their parents' decease the business names which have made this firm so honorably known wherever a tree is bought or sold. Aside from this, rosarians will miss him more than all. Young as he was, he had already become a leader and an authority in all that concerns the rose. We are sure the sympathies of the whole horticultural body will go out to his wife and aged parents, especially as their loss is in this case so very much our own.

ASTRAGALUS CANARIENSIS.—Mr. Valentine Burgevin writes: "It was probably through my own oversight that you substituted 'Tropæolum canariensis' for 'Astragalus canariensis' in my essay 'Amongst the Flowers' which you were so kind to make room for in your excellent magazine. The latter name was given to me by a florist when I became acquainted with the plant. I bore with philosophic patience the reflection that the error

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FLOWER GARDEN AND PLEASURE GROUND.

COMMUNICATIONS.

JAPAN MAPLES.

BY S. B. PARSONS, FLUSHING, L. I., N. Y.

I notice in your August number that Mr. Strong reports to the Massachusetts Horticultural Society that these plants in our nursery do not get from the frames to the open ground, to any extent, and that they require such careful nursing as to unfit them for ordinary cultivation.

If I recollect rightly, Mr. Strong has not visited our grounds since 1879, and I think that he should not, without careful inquiry, have made so sweeping an assertion. The fact is that nearly all our saleable stock of Japan Maples is planted in nursery rows and cultivated with the plough. There are some twenty-two rows two hundred feet long. There would be many more, except for the very active demand.

We have Polymorphum eight feet high, and Polymorphum sanguineum five feet high, growing luxuriantly in the open ground and rather too tall to be kept in frames.

Of valuable plants like hardy Azaleas, Viburnum plicatum, and many well known hardy species, we are in the habit of keeping very young plants in frames without glass, for convenience of culture. We do the same with Japan Maples until they are large enough to plant out for plough culture.

So far from being tender here, they are exceptionally hardy and have not been the least injured the past winter, in localities where Norway Spruce and Hemlock have been killed. They are hardier than Altheas, because, in the twenty years in which we have cultivated them Altheas have been winter killed, and these have not.

If any plant can be called hardy, the Japan Maples can, and they have also a luxuriance of growth which quite takes them out of the list of those which require "careful nursing."

A VISIT TO THE NATIONAL SOLDIERS' HOME, DAYTON, OHIO.

BY H. D. BRAND, DAYTON, OHIO.

In my visits to this most delightful and beautiful place, I have often wondered if there had been a description given of it in the MONTHLY; and have had it on my mind to write a short sketch for it, and my last two visits compelled me to do so.

The Home lies three miles from the city of Dayton and upon rising ground, much higher than the city. What Fairmount Park is to Philadelphia, and Central Park to New York, the Home is to Ohio and Indiana, for there is not a day passes without one or more large excursions coming to view this wonderful place, and all the trains are run directly into the grounds. The Home stands upon a square of land, six hundred and fifty acres,

and one-half is devoted to park, lakes and lawns. The moment one enters the gate of this splendid place he is filled with delight; here we enter a lovely carriage drive, beautiful lawns, well mown and well kept; also fine groups of firs and pines meet our eyes as we come along, and in the distance upon our right the matchless Soldiers' Monument, a shaft of pure white marble, and on our left, away in the distance, the gem city of Dayton. We wind around and at last come to the flower gardens and lawns, with the splendid sheets of water stretching away in the distance. There are over twenty-five acres devoted to flowers and sub-tropical gardening, beautiful in design and execution, only to be matched but not surpassed by any the writer has seen in Europe, Philadelphia and New York; all under the careful management of Mr. Chas. Beck, the indefatigable chief Gardener, who has the satisfaction of bringing it up to its present pinnacle of fame. At the present time, however, the chief attraction is a monster Agave Americana (which weighed over two tons when placed on the lawn) in full bloom. It was moved out of the greenhouse early in May and placed in the center of the lawn facing the lake, where it commenced to throw up its flower-stalk and at the present time it has grown to the height of thirty-five feet and measures seven inches in diameter at the base of stalk; the stalk runs twenty feet before the flower-stalks branch out, the whole forming a beautiful tree, the flowers forming in thick masses at the ends of each branch; in color a pale yellow and long narrow trumpet-shaped flowers, and fragrant. One of the gardeners said, "all the bees of creation are there." I wish the readers of the MONTHLY could stand as I do, and feast their eyes upon the sight—without which they will hardly be able to form an idea of its majestic splendor.

UNWORTHY NOVELTIES.

BY C. M. HOVEY.

It is very fortunate that our tastes differ, otherwise in horticulture our gardens would all be alike. We should all plant Kieffer Pears, and not have such poor sorts as Bartlett occupying valuable room. So too with shrubs; we should all plant —something—well, snowballs, if you please.

Your correspondent, Virginian, seems to have been a most unfortunate man. He invested half-a-dollar in that "wonderful Hydrangea paniculata grandiflora," which he thinks sure is a disgrace to the lawn. Well, perhaps it is. I guess he is right and all the readers of the MONTHLY should contribute to make up the loss and enter a protest against being any longer humbugged by such trash. Why, it is no comparison to an old Barberry bush, or even an old-fashioned Snowball; for it will persist in flowering in August, when we don't want it, having plenty of Altheas.

Well, it is no use quarreling about matters of taste. If a Virginian don't like the Hydrangea, somebody else does. If we could be humbugged every day with a new plant as good as this one, it would enhance the old saying, that "it is as much pleasure to be cheated as it is to cheat."

Certainly there are unworthy novelties enough without classing the grandest of all new shrubs among them, or showing ones utter ignorance of what is truly beautiful.

PLANTING IN SUITABLE POSITIONS.

BY WM. ROBERTSON, SUPT. OF GOVERNMENT GROUNDS, OTTAWA, CANADA.

The formation of the root determines the nature of the material in which it will best grow. Nature has constructed roots in such a variety of ways, adapting one to firm substances, another to soft, some to moist and others to dry material. If we look at our native forests, where nature controls the whole, we see trees always finding the position and soil most suitable for them; so that the nature of the soil can be known by the variety of tree produced.

Let us take, for example, the planting of soft and hard Maples. No one appears to think that there is any necessity for different positions for them, although the one is always found on flat table land, and the other on high dry land; the one perishes for want of sufficiency of moisture for the roots, whilst the other cankers and becomes diseased from an over abundance of it. They both may live and grow, but, if you notice, you will see that those in suitable positions will take the lead. In flat land the soft Maple is far ahead of any hard that may have been planted, and the reverse on the high land. The soft Maple will sometimes struggle along for years on high ground whilst the hard is growing most luxuriantly in just the same situation.

I make it a point in tree planting to set each variety where it will succeed best, and to see that the roots are plentiful, with a good clean healthy stem. I care nothing about the top, because, if I get things as they ought to be, not as a huge cutting, I will soon give you a good top and a finer tree than is generally had when the top is left on.

The same laws apply to indoor plants as to outside ones.

Men will inquire sometimes to what country the plant belongs; if from a tropical one they apply strong heat, neglecting moisture in the air, but never fail to give plenty of water at the root, and then they wonder why they don't succeed. We should remember that in tropical countries, mountain and swamp, high land and flat abound, as in more temperate countries. But the cause of much unsuccessful cultivation of plants, I do not hesitate to say, is imperfect drainage. A recommendation to drain well is always affixed to instructions given about plant culture, and it cannot be too strongly urged. Men have been found to argue that this great care about careful drainage is only a secondary consideration. Perhaps it may be, in so far as the cultivation of small plants for market is concerned, when only very small pots are used, with a clear sky above. But in less favored countries, such as the British Islands, drainage is a necessity in the earlier stages of growth. Perfect drainage hurts nothing, but imperfect does; and with all the warnings given about this, more attention is still needed before we see plants in general health. It would be better if persons handling plants were more observant of their natural requirements based on the characters of roots.

There is no doubt but that the great element in the growth of plants is sufficient moisture for their wants, and no more. Nature either sows or plants where proper degrees of moisture and heat are found. What a diversity in this may be noticed in seeds! One sort requiring months, even years to germinate, others will do so in a few hours. The inexperienced often lose many seeds for the want of knowledge of this. There are roots that must be continually submerged in water, and those that must be suspended in the air. A knowledge of the nature of roots will be found of great benefit to plant cultivators.

THE PEARL TUBEROSE.

BY A. VEITCH, NEW HAVEN, CONN.

Ever since the Pearl Tuberose was introduced it has been spoken of in catalogues as superior in every respect to the old variety, and we readily admit that for flowering under glass, too much has not been said in its behalf; but it is possible that in extolling its good qualities many of its admirers have either overlooked or ignored its bad ones.

The charge we bring against it is that when planted out of doors it is not to be relied upon. This has been the case in numberless instances, ever since its introduction. Sometimes it does very well, but in most cases the flowers open badly, and they are so seedy in appearance as to be unfit for any purpose whatever. So true is this that many growers have found it to their advantage to go back to the original, which, but for its occasional reversion to the single state, serves their purpose fully as well. The flowers of this sort may not be quite as large as those of the Pearl, but this difference is more than made up by their superior elegance of form and purity of color, under all conditions when growing out of doors.

NOTES ON THE SEPTEMBER NUMBER.

BY W. F. BASSETT, HAMMONTON, N. J.

Is Gynura aurantiaca really a hardy plant? I had supposed it to be something like the Coleus, in this respect. What a wonderful effect these violet hairs produce. The stem and leaves remind me strongly of the common Fireweed, Erecthites hieracifolia, yet these hairs give it a peculiar changeable color which is very beautiful. In like manner, the old Coleus Verschaffeltii always reminds me of the common catnip, and its beauty is due to its colors alone.

In the article on "Yellow Flowers for July," should not Rudbeckia trifolia read R. triloba? In my collection of native flowers I have several yellow ones that bloom in August and September, which are really beautiful.

Helianthus giganteus has a very leafy stem, five to six feet high branching freely at top, and produces great numbers of flowers of a delicate light yellow, with center of yellowish green. Helianthus angustifolius is not so tall, growing three to four feet and loosely branched from the ground up. Its flowers are much deeper yellow with black centers, and where several plants grow near each other make a blaze of "sunshine."

Helenium autumnale is quite interesting from its winged stems, even when not in bloom, and the notches in its light yellow petals give the flowers a fringe-like appearance. This grows from two to three feet.

Among the Solidagos we have some fine yellow flowers. Solidago virgata growing from two to four feet with its wand-like stem and brush of flowers, not unlike some of the herbaceous Spireas in form, and the individual blooms quite large, is a very elegant species and quite showy.

There is another very showy late blooming yellow flower, which I have never tried to trans-

plant, and as it is classed as a root-parasite, perhaps it cannot be done successfully, but probably it might be grown from seed among trees. I allude to Gerardia quercifolia. It is a very large species, growing from four to six feet, and in addition to its flowers, possesses another element of beauty, in its stems and foliage, which are finely shaded with purple.

[Gynura aurantiaca, being native of Java, cannot, of course, be "hardy," in the sense of enduring frost, but we took Mrs. Wellcome's expression to mean that it had a free, vigorous growth in the open air. "Hardy" is an elastic phrase in Horticulture. Trifolia was an error of our correspondent, and over-looked by the sub-Editor. It is R. triloba.—Ed. G. M.]

EDITORIAL NOTES.

PRUNUS TRILOBA.—This pretty double pink dwarf plum was introduced by Mr. Robert Fortune from China in 1856, and named by Dr. Lindley in the *Gardeners' Chronicle*, Prunus triloba. It is now common in cultivation, but in Philadelphia suffers much from a species of fungus attack allied to the fire blight in the pear, and to which the common dwarf almond is also very liable. In France last year the double flowers reverted back to the single state to enable fruit to perfect. The little plums are about the size of a Houghton gooseberry. Mr. André thinks there are botanical differences sufficient to warrant a division from Prunus and he names it Prunopsis Lindleyi in *Reveu Horticole*.

STOCK FOR GRAFTING ROSES.—The editor of *Journal des Roses* believes that Rosa polyantha will prove one of the most acceptable of stocks to the rose grafter.

THE DROP OR BAG-WORM.—As the seasons roll around, we have the usual number of unfortunates who write of some "worm in a bag" which eats the evergreens and destroys them—the arborvitæ suffering especially. The remedy is very simple. Look at the trees from week to week, and when the pests are small pick them off and smash them. It is but short work, and very effectual.

DOUBLE HONEYSUCKLE.—Rev. E. P. Powell has a double yellow honeysuckle. We do not know that there is a double honeysuckle in existence. Do any of our readers?

A DWARF STEVIA.—Mr. Massey says that a novelty produced by Mr. Fistler, gardener at the White House Gardens, Washington, is a dwarf form of Stevia serrata. He was shown a large lot of this in 7-inch pots, which stood uniformly about a foot high and with bushy tops about ten inches across. This is their natural habit.

A DOUBLE LILIUM AURATUM.—Mrs. M. D. Wellcome, of Yarmouth, Me., has a lily which has come double two successive seasons, and will no doubt prove to be a constant variety.

ROSA LUCIDA FLORE-PLENO.—In Mr. Ellacombe's garden at Bitton this pretty rose grows and flowers freely. Although much altered by cultivation from the dwarf wild rose of the United States, there seems no doubt of the propriety of referring it as a variety to R. lucida. It seems identical, too, with the rose figured by Andrews in his *Monograph* as R. Pennsylvanica flore-pleno. The outer petals of this fade into a pale rose, leaving the center of the flower a deep rich rose color.—*Gardeners' Chronicle.*

AZALEA MOLLIS.—Very fine varieties of this useful flowering shrub are now in bloom at Grasmere, and amongst them I would single out Isabelle Van Houtte, the flowers of which are very large, of a deep cream color, the upper petal being strongly marked with yellow, or, more properly speaking, bright maize. It is a singularly attractive and beautiful kind, and should be in every collection. Every garden should possess some plants of Azalea mollis; they are so effective when in bloom, and not all fastidious as to soil. Loam or rich peat is often considered indispensable, but Mr. Stevens grows them in his ordinary garden soil, which is very light, approaching sand indeed, and they seem to be doing very well in it. Another very fine kind is Beali major, flower salmon-pink, upper petals strongly marked with bright orange—a most telling kind.—*J. C. B., in the Garden.*

PICEA CEPHALONICA.—This beautiful and comparatively hardy silver fir is a native of Cephalonia, which is the largest of the Ionian Islands, some forty miles long by an average of fifteen wide. It is the most prominent conifer of that island.

ANDROMEDA JAPONICA.—This pretty hardy ericaceous plant is growing in favor in England.

PAPAVER UMBROSUM.—Of this brilliant annual Poppy, Mr. Wolley Dod sends some fine blooms cut from stems two feet high. The flowers are some three inches across, handsomely cup-shaped

and of an intensely deep crimson, with large and conspicuous jet black blotches at the base of each petal. Those who do not know this showy hardy flower should make its acquaintance, for it makes the garden very cheerful just now with its masses of glowing color.—*The Garden.*

SCRAPS AND QUERIES.

LARGE SUNFLOWERS.—"W. C. B.," West Philadelphia, says: "Enclosed you will find a clipping from the *Examiner* of New York, describing a sunflower, the dimensions of which the paper seems to doubt. We have three large sunflowers, the largest of which we carefully measured and found it to be as follows: Height, 13 ft. 11 in.; circumference of stalk at base, 12 in. Some of its leaves are 18 in. across and 21 in. in length; the blossoms, large and small, number forty-two, the largest of which measures 8 in. in diameter—across brown center, not measuring yellow petals (?) In general appearance it resembles the one described in the clipping. I send you this, thinking it may be of interest to you. The extract is as follows:

"'Either a Hartford (Conn.) paper draws a pretty long bow, or there is a pretty large specimen of a sunflower growing in that city. It grows, the paper says, straight up, and stands about 12 ft. high, crowned with superb yellow blossoms, which droop from their own weight. Its sturdy stalk measures 9 in. in circumference. Some of its leaves, which hang like elephant's ears, are 18 in. long and 16 in. across. The blossoms, large and small, number between forty and fifty.'"

HYDRANGEA PANICULATA GRANDIFLORA.—"J. M.," Philadelphia, writes: "Besides the animals at the Philadelphia Zoological Garden the trees and shrubs are well worthy the attention of visitors. It has not been the case that common trees have been planted to 'fill up with,' as is so often done in planting. Many rare deciduous and evergreen trees are to be found therein, and all are well cared for. The most attractive shrubs in flower in the latter part of August were some specimens of Hydrangea paniculata grandiflora. They could not have been less than five feet high and the same in width, and covered as they were by their white blossoms, were justly admired by the hundreds who saw them."

TREES FOR PLEACHED WALKS.—"S. W. N.," Philadelphia, writes: "Please inform me through your journal what kind of trees are most suitable in this country for a pleached walk, also any necessary information concerning the planting of one, will be acceptable, and if there is a successful one in the neighborhood of Philadelphia."

[By pleached walks we understand walks that are bordered by trees which have their branches plaited together, so as to present a flat green surface. For this purpose the different willows are often employed in Europe—at least for making pleached fences—but few kinds under culture are strong enough for an arbor. The Linden would be best for this purpose. This is often employed in Europe, but the Editor has noted but few instances in America—one of these few being in the grounds of the Soldiers' Home at Dayton, Ohio—though that tree is trained rather as a screen than as an arbor.—Ed. G. M.]

AILANTUS GLANDULOSUS.—"J. W.," South Natick, Mass., writes: "Will you please give me the name of this tree? I send you leaves and fruit. The general appearance is that of Sumach. It is a very handsome tree at present."

[This is the female form of the common Ailantus, and, as our correspondent remarks, a particularly handsome tree at this season when covered with its large bunches of golden brown seeds. The female form also has an advantage in emitting no odor as the male does, and which odor is too strong for some people. The female form can be readily perpetuated by cuttings of the roots, which usually grow freely.—Ed. G. M.]

PRESERVING ROSES DURING WINTER.—"H. S. W.," Cayuga, N. Y., writes: "How can I successfully care for a lot of choice tea roses during winter? Have no greenhouse to transfer them to. Have had no success in protection by tying up. Can I pit them? If you will be kind enough to answer through the October number of the MONTHLY you will greatly oblige."

[Take them up after the first frost has killed the leaves, cut out or shorten back immature wood, select a piece of ground where the water will not lie, plant the roses thickly, sloping the branches somewhat, and then scatter earth through the branches, sloping the mound so that the water will run off. As soon as danger from severe frost is over in spring take out and replant.—Ed. G. M.]

THE ELM BEETLE.—An Elizabeth, N. J., correspondent says: "I write you in a state of despair as to what I am to do to save from destruction a beautiful elm tree which we have in our garden. Every year regularly it has two crops of leaves destroyed by villainous little worms, which commence by being quite minute and grow to be from

half to three-quarters of an inch long. It is not an ordinary elm. They are in a bad enough condition, but this one fairly makes me sick. The tree is about twenty feet high now and has a smaller leaf and more branches than the other elms. These worms seem to be leaving the tree now, and yellow-striped bugs with wings are making their appearance as usual. They are the worms under a different form, I am inclined to think. At any rate, they have nearly finished the first crop of leaves, and I do hope you can tell me what to do in the matter. I cannot bear to see the poor tree killed before my eyes."

[A powerful garden engine, throwing water with Paris green or London purple over the leaves, ought to destroy the insects. The young caterpillars come down the trunks to undergo transformation in the ground, and can be trapped and destroyed at that stage. The beetle is a species of Galeruca.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

COMMUNICATIONS.

GARDENING NOTES FROM NEW ORLEANS.

BY M. H. LESTER.

I have taken the liberty of sending you some Crape Myrtle flowers which I regard as the largest and best clusters I have ever seen. I regret they are not in better condition. The plant of the white variety has some two hundred bunches on, some near the top, too high to reach, larger than the samples; the other is as well flowered for its size, but is not so large a plant. They are the prettiest flowers we have on the place at present.

Also, in a small box, I send you three beetles. They are committing great depredation amongst palms, at this time of year. The larger specimen I am informed is the male, the smaller the female. They have never been seen in this locality until recently. All palms on this place are protected by wire-netting, with a mesh too small for them to get through, but they occasionally effect an entrance through the ground near the base, as you will see by the section I send, which will explain their mode of operation a great deal better than I can.

Will some one tell me what to do with my Eucharis? I have over one hundred of what would be, in any other place, blooming bulbs of Amazonica and candida, collectively, and did not have over two dozen flowers the whole season. I used to get Eucharis to bloom well, but must have lost the secret. I have got them in pots and pans, singly and doubly, and five in a pan, in the best parts of the houses, without, however, having any bottom heat. I see that English growers recommend, in order to have them bloom well, to keep the foliage in good condition. Now, I can beat all England on foliage, mine look more like Strelitzias than Eucharises, but leaves are all I get.

[The specimens of crape myrtle were very fine, the largest panicle being one foot in length and eight inches across at the base.

The beetles belong to a class of insects known as tumble-bugs. The palm which our correspondent sends has a hole bored at the base, an inch in diameter and into the heart of the plant.—Ed. G. M.]

ALSOPHILA AUSTRALIS.

BY JOHN WOODING, PENCOYD, PA.

This plant, commonly called Australian Tree Fern, is deserving of special attention and care by cultivators. Good specimens of these ferns when well grown have a beautiful appearance. Their noble habit of growth makes them fine ornaments for the lawn during the summer months. The soil best adapted to their growth is good rotten sod three parts, one of peat mould, and a little silver sand. This should be well mixed together, but not sifted; use it as rough as possible. It is necessary that there should be plenty of drainage at the bottom of the pot or tub, as there is nothing worse than stagnant water at the roots. These ferns thrive very well in a temperature of 55° to 60° at night with a rise of 10° or more for the day. The plants should be at all times shaded from the sun. During their most active season of growth they will require plentiful watering. Neglect of this will ruin them for years. The propagation of

these plants is from seed or spores, of which millions are produced. A portion of the frond can be pinched off with the seed attached, and laid by to dry on paper. It will be ready for sowing in a few days. The soil should be leaf mould and silver sand, run through a fine sieve, and put into a regular seed-pan, and then watering with a fine rose-pot, and the seed sown on the top, without any covering of soil. A sheet of glass should be placed over the pan to catch any water that may fall. To obviate the necessity of watering the seed overhead the pan can be set into another pan that will hold water, and be kept supplied as the process of absorption goes on. It will take from five to six weeks for the seed to germinate over a bottom heat of 65° or 70°. When the plants are large enough they can be pricked off into other seed pans, each plant about two inches apart, using the same soil as before advised. As they advance in growth they can be potted into two-inch pots.

NOTES BY JAMES LESLIE,

ST. JOHNSBURY, VERMONT.

Test of Sound Cultivation. — Pimelia spectabilis is a pretty plant for use in small size. I have some plants here in four-inch pots which will average twenty-six heads of bloom to the plant.

Cattleya citrina is grown here, (Underclyffe, residence of Col. F. Fairbanks,) without shade. Under such treatment the plant flourishes and blooms well.

STEAM HEATING.

BY A. B. FOWLER, BOSTON, MASS.

As a partial response to Mr. Breitmeyer's article on Steam Heating, I would submit for your perusal a few extracts from a letter written by John Taylor, Esq., of Bayside, L. I., whose glass covers an area of 50,000 square feet, and whose heating apparatus heats his glass, his large dwelling-house 500 feet from the boilers and also his stable, which is about 300 feet from the boilers. I thought the testimony which he presents would be the best argument that could be offered to capsize the unfortunate Detroit gentleman. The cases are nearly parallel and the results rather diverse.

"*To Horticulturists or persons using Greenhouses:*

"The Exeter Machine works have during the past summer (1882) put into my greenhouses at Bayside, L. I., which are very extensive, the heating apparatus. It works on the low pressure system, the pressure seldom being above five pounds and sometimes no perceptible pressure. This has been working through one season; was an experiment so far as steam heating was concerned; was an experiment as to the economical and convenient management of the steam, and as to its working at low pressure; but in every respect, so far as I have been able to discover, it is a success.

"Steam as a means for warming greenhouses I consider the best known; it being more completely under the control of the gardener, and doing away with the necessity of numerous fires. I have no hesitation in saying that in all large establishments steam will be a necessity.

JOHN TAYLOR."

CULTURE OF PERPETUAL CARNATIONS IN FRANCE.

BY JEAN SISLEY, MONPLAISIR, LYONS, FRANCE.

Their propagation is very easy. Young cuttings strike rapidly in a hot-house, on bottom heat during winter. When rooted and hardened for a short time in a pit, or a green-house, they can, in April or May, be planted in the open ground. They can also at that time stand a long journey; they must be packed without earth at the roots, in damp moss. They require a very airy situation. When planted out they must be shaded for a few days, if the sun is hot. They must be kept moist, and when they are in a growing state, watered from time to time with liquid manure. When they are about six inches high they must be pruned to at least half their size, to obtain side shoots and a quantity of flower buds.

To obtain them in bloom during the following winter until April and May, they must be taken up about the middle of September, potted in six-inch pots, and put on slight bottom heat in a pit, or a stove, shut for about a week and then aired gradually; if the weather permits, provided there is a temperature of 50° or 60° centigrade, (about 40° Fahrenheit), they do not require more heat. Of course, the plants destined for this purpose must have, when taken up from the ground a good quantity of flower buds, and some will have as many as from sixty to eighty. When the flower buds begin to expand they can be removed for indoor decoration. I have some in my dining-room, since more than a month, and they are still in bloom. They must be placed as near the light as possible.

The plants which the first year do not bear a sufficient number of flower buds, must not be lifted from the open ground, unless the winter appears to be severe, then they can be taken up with

a ball of earth adhering to the roots, and put close to one another in a pit, uncovered as long as possible, and when frost sets in, covered only to be protected against it, but aired as much as possible. These plants will produce flower buds and may be potted in March or April. If the plants are potted and put in a stove before they have a sufficient number of flower buds, they grow straggling, lose their leaves and will bloom badly.

The largest and best grower of Perpetual Carnations is Laurent Carle, at Monplaisir, Lyons. He is especially addicted to their culture, and has improved it much, since he succeeded to Algéatiere, the creator of this very ornamental plant. Many people have failed in its culture; I hope therefore that the preceding instructions will be welcomed and procure success.

EUCHARIS.

BY J. B., FREDRICKTON, N. B.

Alfred Ray, Esq., of this city, has dozens of large pots of the above lily in bloom; the most vigorous and healthy I ever saw. His moist heat and careful cultivation otherwise by Mr. Tait, gardener, has been abundantly rewarded. One would think by the quantity sent by Mr. Ray to the Episcopal church on Christmas morning for decoration, with other choice flowers and curious forms of tropical vegetation, that they were as plentiful as the ox-eye daisies are with some of the poor farmers here in June and July. It is surprising how easy this choice flower grows where it gets the right treatment.

LIMITING THE SIZES OF FLOWER POTS AT EXHIBITIONS.

BY N. ROBERTSON, SUPT. GOVERNMENT GROUNDS, OTTAWA, CANADA.

In your May number some remarks were made on the above topic. Thirty years ago in Scotland, the limiting of the sizes was practised and considered the best means of bringing out and testing the ability of the competitor. Much discouragement has been caused by the present prevailing practice of giving all the best prizes to large plants. It is generally known beforehand to whom the prizes will go, thus deterring the exhibiting of smaller specimens by others, although often of far superior cultivation. In many cases these large specimens have been handled by several persons during their growth, so that no merit is due to the exhibitor for their production; yet it would not be prudent to rule them out entirely because of their decorative properties. For hard-wooded plants such as Azaleas and other slow-growing ones the limiting of pots is not so practicable, because of the length of time it takes to produce them; but for all soft, rapid growing plants the limit should be definite, if the true intention is what it should be in all Horticultural Societies, to develop and bring out the best cultivation. What does more to add beauty to an exhibition than nice, healthy young stock, the product of a short time?

There is also another good point in this that it enables the judges to give a much more satisfactory decision by bringing the plants more into line as it were. For my own part superior culture should always have the preference. What is wanted in all Horticultural Societies is to advance culture, and everything tending to do so should have a foremost place in their prize lists. Competent and reliable judges are very necessary to the prosperity of such societies.

STEPHANOTIS FLORIBUNDA.

BY MANSFIELD MILTON.

A well flowered specimen of Stephanotis is a sight well worth seeing, and still, how seldom do we see a really good specimen flowered as it should be? Its pure white waxy, sweet-scented flowers are also well suited for florists in bouquet making. A soil composed of fibrous loam, leaf-mould and well rotted manure, with sufficient sand to insure the watering passing off freely. The pots should be well drained, and a stove temperature given it. Being of scandent growth, it requires a trellis to grow on, the balloon-shape being the best for showing off the flowers to best advantage. This is one of those old inhabitants of our stoves which has kept its own against most introductions, and to-day should be more grown than generally seen.

DRACÆNA GOLDIEANA.

BY JOHN F. CLARK,

FERGUSSON'S GREENHOUSES, PHILA.

This magnificent ornamental foliage plant is one of the very finest of its genus. It is a native of western tropical Africa. Figured in the GARDENER'S MONTHLY, October, 1881, page 300. This remarkable Dracæna is one of the most effective of decorative plants. For the stove and warm conservatory, or as a plant for contrast it is unrivaled. The habit of the plant is erect; the

stems are closely set with stalked spreading leaves. The blade of the leaf is cordate-ovate acuminate, with a yellowish-green costa, banded with a dark green and silver gray upon a dark green foliage. The back of the unrolled leaves is a pale reddish or wine color.

"One of the most distinct and beautiful plants I have ever handled," once said Robert Buist.

I find it thrives best in two parts of loam to one of peat and sand, with good drainage. It loves shade, heat and moisture. It can be propagated from cuttings under the following treatment: use single eyes with the full leaf on, which support with a small stake. They are then inserted in a propagating bed under double glass, where there is a temperature of 85 to 90° bottom heat; then thoroughly watered and sprinkled three or four times a day. In about four weeks they are ready to pot off. Top cuttings make the best plants. Great care should be taken not to allow water to remain in the center of the cuttings while in this temperature, as they would be apt to rot out. When it becomes necessary to water or sprinkle they should be covered. Small pieces of paper, conveniently at hand, will answer the purpose. A batch of these cuttings, put in January 9th, 1883, and treated as above, were rooted February 9th and potted by the 20th. On April 16th they were put into three-inch pots, and by June 2nd were ready for another shift.

NOTES FROM NEW ORLEANS.

BY W. H. LESTER,

GARDENER TO PROF. RICHARDSON.

Herewith I send you some flowers of Hydrangea Otaxa, to see how they compare with those in Philadelphia; also two pieces of Bignonia, the names of which have been lost. The one in bloom is covered with whorls of bloom at every joint and is a delightful object.

Have you ever seen a Magnolia grandiflora thirty to forty feet high, with a bare stem for about half the distance covered with a Rhyncospermum jasminoides breaking out through the top, flowered from the ground and hanging in garlands all over the Magnolia, also in bloom and bud? If not, all I can say is, up to the present time you have missed one of the grandest sights in nature.

Gardens in this city, that have been taken care of, have been and are looking very gay. Gardeners appear to be all busy, and have got all the evergreens shaved, etc. The natural soil in this section is a kind of a cross between brick-clay and shoemakers' wax, and every pound of potting soil I use, has to be hauled from New Jersey, except some Mississsippi mud, called by courtesy, sand! All the heat-loving Orchids do well here, Cattleyas, Dendrobiums, Oncidiums, Phalænopsis, Ærides, Angræcum and several of the Mexican varieties as Lælia, Chysis and Lycaste. With Odontoglossums we cannot do much,—cannot get a place cool enough for them.

The palm-house is occupied by such varieties as Acanthorhiza Warzcewicsii, Astrocaryums, Attalea, Carludovica palmata, Caryota urens, Areca Verschaffeltii and lutescens, nearly all the Chamædorea, and Cocos, Kentia, Livistonia, Pritchardia macrocarpa, Thrynax, Ptychosperma, Calamus, Oreodoxa regia, Geonoma gracilis, and several others, too numerous to mention. We have specimens outside to remain, of such "trash" as Phœnix dactylifera, P. sylvestris, P. tenuis, P. reclinata, Sabal Blackburniana and palmata, Cocos Australis, Jubæa spectabilis, Chamærops Fortunii, and excelsa, Latania Borbonica, Chamædora scandens and several others.

In the fern-house—but I will not talk of that at present, for if I commenced to tell you about my Alsophila Australis carrying twelve fronds from 12 to 14 feet long, and Cibotium regale worse still, with Pteris serrulata and Davallia pyxidata, and all my Adiantums and hundreds of others, I should never end—and then my Cyanophyllums, Diffenbachias, Nepenthes, Alocasias, Anthuriums with Crotons and Dræcenas, till I cannot rest day or night, or "I run so far behind" that I do not know what to commence first. But I have every modern facility and convenience for doing the work, including a small boy to break pots, plants, and glass, play with the cats, give us an "over the garden wall" solo, and attend to all such important matters.

I omitted to say I counted forty-seven flowers on one side of the Hydrangea, and then I got mixed up and lost my temper, after counting thus far. Also, if you recognize the Bignonias would like to have the name, through the magazine. But you must not think by this that I have got all the plants in this neighborhood, although having the largest and best private collection in this section, to take care of. I believe some of my neighbors have better plants than I, of some of the same varieties, and I am very glad of it, but I can't help it just at present.

[This pleasant letter was written on the 7th of June, but laid over till the Editor's personal return,

on account of the inquiry about the Begonias. They are now so dry, not having been pressed, that there is little left of them; but the large one appears to be B. Chamberlaynei and the small one B. Chica.—Ed. G. M.]

STREPTOSOLON JAMESONI.

BY JEAN SISLEY, MONPLAISIR, LYONS, FRANCE.

I wrote to you on the 5th and 10th of March, and to-day send you the drawing of a shrub, Streptosolon Jamesoni, recently introduced by Edward André from South America and propagated by Victor Lemoine, of Nancy. It grows in its native country at about 7,000 to 9,000 feet above the level of the sea. It grows from about four to six feet high. The wood is like that of the Lantana or the Fuchsia. It flowers abundantly from March until July, and will in our climate make a fine greenhouse shrub. It was at first introduced in Europe about forty years ago by Hartweg and called Browallia Jamesoni by Bentham and sold to Veitch, of London, but has since been lost. But perhaps you know more about it. Nevertheless you may be pleased to have the drawing to make your readers acquainted with.

To those of your readers who have no correspondents in Europe, I will with pleasure act as intermedian, and procure it for them, as well as all other plants.

[We have already noticed the introduction of this beautiful plant into European gardens.—Ed. G. M.]

EDITORIAL NOTES.

NEW FRENCH ROSES.—Twelve new ones are to be introduced this season by M. Liabaud.

ROSE NIPHETOS.—This is a French variety raised by Bougere-Breton, and sent out in 1843. It is getting to be an old Rose now, though its merits as a winter forcer for cut flowers, have only recently been recognized to any great extent. M. Granger, a French rose grower, revived its popularity, in this respect, about 1875.

STEAM HEATERS.—These seem to be growing in popularity. Messrs. Hovey & Co., of Cambridge, Mass., Lonsdale & Burton, Germantown, and the Agricultural Department at Washington, have recently set up steam boilers from the Exeter Works; and the old and extensive cut-flower establishment of L. C. Baumann, at Germantown, will introduce steam heating, employing however a second-hand locomotive boiler to heat up with.

CUT FLOWERS IN AMERICA.—M. Lachaume, of Havana, is astonishing the French by telling the *Reveu Horticole* of the great love of Americans for cut flowers. He gives the true, but what must be to them a marvelous story, that one grower alone, near New York, cut 10,000 buds of General Jacqueminot Rose last winter.

ROSE CRAMOISI SUPERIEUR.—The *Journal des Roses*, figures this beautiful old china rose, which, if we are not mistaken, is the same as we have under culture as Agrippina. According to the magazine cited, it was raised in 1832 by M. Coquereau, an amateur near Angers. It was sent out in 1835 by M. Vibert.

SCHISMATOGLOTTIS LONGISPATHA (see illustration).—Leaf plants, continue to enjoy great popularity. The arum family has furnished a goodly number for the most fashionable lists. Here is another addition, with a new name for cultivators, though its relationship to old acquaintances can be seen in its face. Mr. Bull, its introducer, gives the following account of it: "A pretty, dwarf, neat-habited Aroid introduced from Borneo. Its short erect stems grow in tufts, spreading by short rhizomes, and are furnished with obliquely ovate leaves, some four inches long, of a lightish green color, marked with a feathered central band of silvery-gray, through which runs the distinct green costa; the slender leaf-stalks about as long or longer than the leaves, have a broadish sheathing base. The inflorescence is curious in structure, the most conspicuous parts being the small yellowish-green spadices."

SCRAPS AND QUERIES.

GYNURA AURANTIACA.—"C. E. P.," Queens, N. Y., asks: "Will some of the readers of the MONTHLY be so good as to tell me of what country Gynura aurantiaca is a native, and when and by whom introduced?"

[Native of Java.—Ed. G. M.]

TROUBLE WITH A TALL PALM.—"G. G. A.," Geneva, N. Y., writes: "A friend has in his grounds an elegant palm (Seaforthea elegans) 14 to 16 feet high and thirteen or fourteen years old. The trunk is about six feet high above the tub before throwing out the fronds. It is getting

almost too high to be housed with facility. Will the palm throw out leaves again if cut off anywhere below the present top? Can it be cut back in any way so as to secure foliage lower down? It is hard to abandon such a beautiful specimen."

[Palms seldom, if ever, put out leaves when headed back. In cases where palms, yuccas, and the like have become too large for the house, a keg of earth or wet moss is kept around the stem at any selected height, into which the plant will root, when it may be cut off below, and thus we get a shorter stem.—Ed. G. M.]

Schizmatoglottis longispatha. (See opposite page.)

FRUIT AND VEGETABLE GARDENING.

COMMUNICATIONS.

APPLES IN MEXICO AND TEXAS.

BY PROF. S. B. BUCKLEY, AUSTIN, TEXAS.

In a recent number of the GARDENERS' MONTHLY it is stated on the authority of some one that apples will not grow in Mexico.

I have seen apples, and good apples, growing at El Paso, in Mexico, and have also seen apples from the interior of Mexico in the market at Laredo on the Rio Grande in this State. From some Austin friends now at Saltillo, south of Monterey, in Mexico, I learn that apples, pears, peaches and strawberries are there, and that they have a plentiful supply of them. In April, 1882, I saw a fine-looking peach orchard at Lampazas, in Mexico, seventy-five miles southwest of Laredo. The trees were young and making a fine growth. Young peaches on the limbs gave promise of good fruit, which the proprietor assured me he had had the previous year.

I have seen many statements in print that apples will not grow in Texas, especially in middle and southern Texas. Fine apple orchards are in the northern part of the State. Such statements are made on the authority of old residents here, some of whom told me a few years ago that it would be wasting time and money to plant apple trees. However I planted a few. They grew well, and I planted more, and now have an apple orchard of more than three hundred trees. From these I have annual crops of fruit, there having been only one failure since they began bearing, about eight years ago. We have apples for home use during nearly the entire year, besides many bushels for the market. The Red Astrachans and Early Harvest ripen during the last days of May, for which there is a ready sale to dealers at from three to four dollars per bushel. The summer and fall apples sell at from one to two dollars per bushel. Hence the planting of apple trees here was a profitable investment, so profitable that others have planted them, from which Austin will have a plentiful supply of apples without importation. Our apples are equal in size and flavor to the best grown at the North. This I know from large experience in growing apples in western New York.

Mexico is a large country and Texas is a large State, and both Mexico and Texas have climates ranging from the tropical to the temperate. Among the mountains and table lands of these regions are places and soils suitable for the fruits and vegetables of temperate climates. The lowlands of Mexico and portion of Texas on the Gulf of Mexico are suitable for and have tropical fruits and vegetables.

To succeed with apples here the trees should branch out near the ground, that the body of the tree may not be exposed to the sun in summer. Mulch the trees for the first two or three years, until the roots be well established. Be careful not to cultivate so as to disturb the roots of the trees during the growing season, then with a good soil apples can be successfully grown in this portion of Texas.

RANDOM NOTES.

BY RUSTICUS, LEXINGTON, KY.

In a former communication to your excellent magazine I recommended as the proper application of manure, surface and plowed under. My reason for this was that vegetation might feed on it with the two systems of roots, coronal and germinal, upper and lower. There is another very great advantage accruing from it, that is, in a dry time the keeping of the earth loose. I treated my main garden in this way, and throughout the disastrous drouth we have had it has worked like an ash bank. Gardens about me became so hard that a spade would not enter them. I kept up the cultivation of this garden throughout the drouth. Quick growth is what is required for crisp, tender vegetables. Well rotted manure promotes it. Manure plowed under attracts the roots downward. Herein is a very decided advantage. There is abundant natural fertility deeply incorporated in the earth. We should aim to reach it. From not working to that end, and from not plowing deep, this buried treasure is often lost.

Mr. Henry Stewart informs us that it impossible to really exhaust the soil. He writes: "The soil

is inexhaustible. We might as well hope to pump the ocean dry, or to reduce atmospheric space to a vacuum, as to wholly exhaust the soil. One acre of soil eighteen inches deep weighs eight million pounds. This soil contains, at a moderate estimate, twelve thousand pounds, or six tons of phosphoric acid, ten thousand pounds of nitrogen and from twenty to eighty thousand pounds of potash. If no organic matter were ever to be added to the soil in the shape of manure or waste from crops or weeds, the land might be cultivated for centuries before it would be exhausted eighteen inches deep. So that 'exhaustion of the soil' is a term used in a comparative sense wholly, and is not an absolute or possible conception."

Now, to induce roots to penetrate deeply is to bring immense stores of valuable nutriment to the plants. The length to which roots extend is surprising. Powerful manure stimulates them to vastly augmented penetrative force. The coronal, or surface roots must be provided for. They are greedy scavengers. Manure spread upon the surface subserves another very valuable purpose. If plentiful it keeps the earth moister by arresting the ascent of the earth moisture. There is always capillary attraction at work, that is, the ascension of moisture from below the surface to the surface. Now, any obstacle which checks it holds the moisture. This is clearly shown by the damp under surface of stones lying on top of the ground. Manure, when abundant, acts in the same way. Again, the rich elements permeating the soil are ever escaping into the air. They can be retained, as we have shown, with earth moisture. This is important, for their arrested progress is so much food for vegetation. This principle of arrest is a leading feature in shading ground. Land left bare throughout the year is losing much. It is not the proper kind of fallow. It should be kept stirred and thoroughly pulverized. Fining soil is productive of moisture in two ways; it interrupts capillary attraction, and also absorbs atmospheric moisture. This is why cultivation should not be suspended during a drouth. It interrupts capillary attraction in this way. When the earth is compact the internal moisture ascends rapidly and easily, and is dissipated, because there are no open spaces for it to cross. When the soil is broken into minute particles the moisture must take longer in getting from one to the other of these particles. When the ground is loose and porous it catches atmospheric moisture much as does a sponge. The old theory that there must be clods for best results is untenable. It is unphilosophical. Roots do not penetrate clods, but simply enfold, embrace them, and so fail of obtaining the full strength of the soil. Earth comminuted admits the sun's rays better, which from their actinic power help both plant and soil.

OUR BEST TOMATOES.

BY MANSFIELD MILTON.

I have for several years been growing the best and newer varieties of tomatoes. I grow for market, and therefore have a good chance of knowing the most profitable and best selling kinds. The earliest tomato I have this season, of smooth shape and suitable for market purposes, is Hathaway's Excelsior. It is early, productive, smooth, and bright red in color. Canada Victor is early, but is too wrinkled for my growing. Acme and Paragon are the most perfect tomatoes I know of. The Acme will sometimes rot, but it is very fine in shape and quality. Some people object to the color, but this is only with those not used to it. The Paragon is almost perfect. It is smooth, large, and good color, but not quite so productive with me as the Trophy, which is fine when it ripens perfectly to the stem, but it will keep green around the stem when the other part is perfectly ripe. Some people are under the impression to get early tomatoes the ground has to be poor, but I do not believe it. With me I get the earliest ones on well-exposed, well-drained, rich soil, having an eastern or southern exposure.

EDITORIAL NOTES.

COVERING STRAWBERRIES IN WINTER.—The strawberry is hardy. The roots will live through the severest winter, but it is generally believed that if the leaves are preserved through the season green until spring it is better for the crop that is to follow. Hence a light covering of straw is a benefit, where the winter is severe enough to destroy the fully exposed leaves. It is not the frost, but the sun which does the injury—hence a little straw serves the double purpose of shading the leaves and keeping the roots from being drawn out.

ORANGE CULTURE IN FLORIDA.—"Budded Orange trees will begin to bear six years from transplanting and a Seedling in eight, but the trees do not arrive at full bearing under twenty years, yet they are profitable at ten. From fifty to a hundred trees are raised on an acre; the value of an average crop on a tree is from five to ten dollars. They

are sold to dealers either on the tree or packed in boxes. They begin to ripen in the fall—in October and November, and can be gathered at any time from November to March, and many of them will hang on the trees much later. They do not fall from the tree when they ripen, but will remain on the tree until spring. It is best, however, to gather in the late fall or winter as the trees begin to bloom again in February." So says Judge Cheney, of Winchester, Ohio.

APPLE BUTTER.—Mr. Garber says the juice of the Sand pear, mixed with cider, makes the most delicious apple butter.

AMERICAN BLACKBERRIES IN ENGLAND.—I see you say at page 520, last volume, that these do very well in this country, but I am inclined to think that the instances of their successful culture are few and far between. My experience of them tallies with that of your correspondent "J. E. D., Devon," as ours have grown luxuriantly, but the fruit is miserable compared with the illustration and our own expectations. When the Kittatinny variety was brought in it was planted in rich soil and the best of positions to secure sunshine with shelter on all sides from destructive winds, and we expected to see the produce something better than that commonly seen in the hedgerows, but it has never been so, and now we only keep them to point out their deceptive qualities. I should have thought that they would have done in either Devon or South Wales, but it appears not, and it would be interesting to know the position in which they do succeed. Are the instances of the description so numerous as to warrant any one advising their general culture? I think not. Probably some may grow them against the wall, and then I would say it is good space badly used. Nothing which can be said or shown in their favor will induce me to have anything further to do with them.—*J. Muir, in Journal of Horticulture.*

PACKING APPLES FOR EXPORT.—The London *Garden* says: "In speaking to Mr. Walter Draper, of Covent Garden, the other day of the state of the packing of the enormous number of apples coming to us from America during the past season, he referred to the great loss and disappointment incurred from bad packing, brands found to be deficient in that way being evaded by the purchaser. He said there would be no objection whatever to the apples being classed, and that sales could be readily found for more than one class, but the ones, twos and threes should be rigidly and conscientiously separated, and kept so in the barrel. The Canadian apples are much better. As it is to Mr. Draper's firm that most of the apples coming to the London market are shipped, his opinion may be worth mentioning to our American readers."

JAMES VICK STRAWBERRY. — Reports from Rochester indicate that this variety proved remarkably productive this year.

THE MARLBORO RASPBERRY.—The *American Garden* is favorably impressed by this new red variety. It is one-fourth larger than the Hudson River Antwerp, and free from its musky aroma.

COLUMBIA GRAPE.—This is a white variety, raised in the vicinity of Washington; it is said to have rather oval berries three-quarters of an inch in diameter, and to ripen in the middle of September in the District of Columbia.

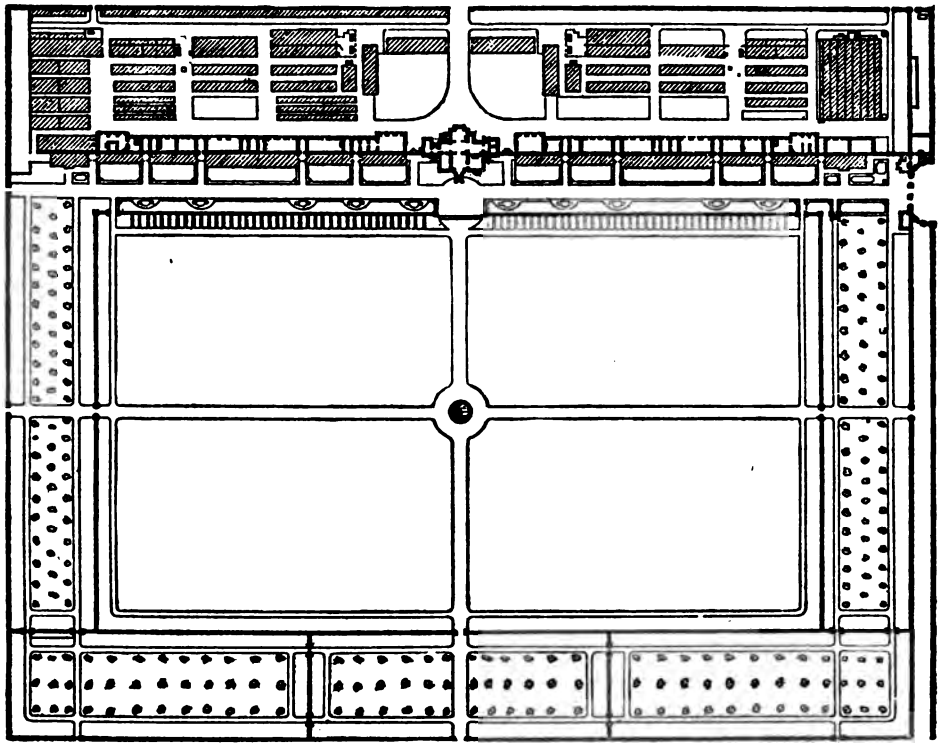
HOW TO DESTROY THE CABBAGE WORM.—A correspondent of the *Fruit Recorder* writing from Port Huron, Michigan, says that he commenced a series of experiments for the purpose of discovering something that would kill the worms and yet not be poisonous to human beings, and finally found that a solution of common alum, made by dissolving one pound of alum in three gallons of rain water, would kill the worms.

His mode of proceeding was to dissolve the alum in a small quantity of water by heating the water, and then add sufficient water to make the whole three gallons. When this was cold he put it into a common watering-pot having a rose spout, and sprinkled his cabbage and cauliflower plants, keeping up this sprinkling as long as any of the insects were about, from the time that the white butterfly began to lay her eggs. He says that he watered them almost every evening, and thus kept his cabbage and cauliflower perfectly clean.

He also tried the alum solution on his currant bushes and with equally successful results, and recommends it for washing the trunks of young fruit trees, for the reason that it is a cheap, effectual and non-poisonous insecticide, acting instantaneously on the worm or caterpillar by means of its astringency and so contracting their tissues that they cannot breathe.

THE VEGETABLE GARDEN AT FROGMORE.—We get very good vegetables and fruits in our markets, but these seldom compare with those raised by the deep culture of the spade or digging fork in an amateur's garden. We have thought it would be of interest to give a sketch of the vegetable garden of Queen Victoria, from which the royal table at

Windsor is supplied. The dotted parallelograms are fruit tree blocks. The four large squares are for vegetables, and the numerous small parallelograms on the upper part of the picture are glass houses for growing such fruits and vegetables which do better thus than in the open air.



We have made this cut from one in a paper on this garden contributed by Mr. Charles Joly, to the French *Journal de la Societe' d'Horticulture.*

GROWING WATER-CRESSES.—*Gardening Illustrated* says: "Watercress is a much valued herb, and, although it can hardly be said to be improved by cultivation—for the produce of a clear brook of spring water can hardly be excelled—yet there are many places in which these natural conditions are not at command. In that case it has to be cultivated, and very good watercress may be obtained by sowing the seed in pans or boxes, and when large enough, planting out in cool shaded positions, such as the north side of a wall, where if kept constantly moist by copious watering, very good cresses are obtainable."

We copy this because it contains a lesson of great importance to those who would grow the plant in America. It will be seen that even in the cool and comparatively dark climate of England it is found desirable to grow it in the cool and in the shade. In our country, where we have so much light, the leaves are as hot as pepper, and hence watercress is only popular in early spring, when most of the growth is wholly under water. Springs and streams partially shaded should be chosen to grow this salad.

RED PEPPER IN TEXAS.—*Texas Siftings* says: "Almost every article of food used by the Mexicans has red pepper in it in some shape; and, not only Mexicans, but Americans use pepper freely, either in its ground form, sprinkled over meat and vegetables, or, in the pod, boiled in soup. The Mexicans call it chili. The well-known author, Mr. N. Webster, calls it Capsicum frutescens (Solanacaæ). When a stranger, for the first time, tastes a Mexican dish seasoned with Capsicum frutescens, he wants the fire department called out at once. These little Mexican peppers are so hot that you have to put on two pairs of buckskin gloves and wait for a frost before you can pick them."

SCRAPS AND QUERIES.

AMELIA PEACH.—We learn from Mr. Charles Black, Hightstown, New Jersey, that this southern peach has done remarkably well with him this season. Though not a good year for peaches generally, this one has had the branches almost breaking down by the weight of fruit. He also speaks very highly of the Thurber, another southern variety. This is a very peculiar kind. It has a greenish yellow look on the outside, but when broken open presents the beautiful pink flesh, so lovely in a ripe watermelon.

MARTIN'S AMBER WHEAT.—"J. L. D.," Bloomsburg, Pa., sends a head of this wheat, which contained fifty-one very full and plump grains.

ENGLISH GOOSEBERRIES FROM SEED.—A correspondent inquires whether English gooseberries, anything like the originals, could be raised from seed—and whether such plants would be likely to mildew less than plants from cuttings. Very good kinds could certainly be had in this way—and we do think that they would be more free from mildew—for it has been found with almost everything, that a seedling plant is constitutionally better able to resist disease than one continually raised from cuttings or grafts.

FRUITS IN KANSAS.—A correspondent, under date of August 6th, from Chanute, Kan., writes, "I have been in Kansas five years, three years where I now am, and have in that time raised five good crops of strawberries and got about as much again, per quart, as I could get in the Ohio valley. I have on my grounds all of the leading varieties, old and new, including James Vick's Jersey Queen, Manchester, etc. Peaches seldom fail here—Mountain Rose, Troth's and Cole's Early, are now ripe. Last season they ripened the 29th of July. I have been keeping a record of their ripening, for the last two years, and hope at some future time to give a few hints on Peaches in Kansas. My Lady Grape is now ripe, as hardy as the Concord, as productive, and much better."

[Our correspondent is a very enthusiastic cultivator of fruits, and has raised a variety of strawberry so well adapted to his part of that State, that we shall not be surprised to hear of its making a splendid record one of these days.—Ed. G. M.]

A PROLIFIC GRAPE VINE.—Under date of Aug. 22d, Mr. Lorin Blodget, Philadelphia, writes: "I have a remarkable grape vine, a Lindley, or Rogers' Hybrid, No. 9, planted in 1866. Grapes are now ripening on it a distance of thirty feet east of the root or stem, and eighty-five feet west sixty-five feet horizontal, and about thirty feet elevation. It covers a trellis thirty feet high on the east end of the house; also a slope twenty by fifteen feet on the eastern roof, then runs fifty-five feet along a north wall, and rises ten feet to the fourth-story roof, full of grapes throughout, and especially loaded on the trellis running thirty-five feet east, down the garden. I estimate its crop at 400 to 500 pounds, and all are very large and fine, although the Rogers Hybrid bunches are not usually symmetrical."

[It is a fact, made more apparent as the years go by, that the shade and shelter of city yards are more favorable to the grape than open fields or vineyards. There is a valuable lesson here, from which extensive grape-growers might profit. Successful, however, as city yards are in grape growing, the case of Mr. Blodgett is one of exceptional interest.—Ed. G. M.]

CABBAGE WORM.—"B.," Colora, Md., writes: "My attention has been called this season to a grub of very small proportions infesting the young cabbage plants, or ground where the seed have been planted, and destroying them when two inches high, more or less, by eating the roots. The plants are growing all right until they have developed four to six leaves, when the mischief begins and the majority of the plants drop over as when a plant "damps off;" but when pulled up the roots are completely girdled or entirely eaten off, but the worm that does the mischief is hard to find. The result here is that late cabbage plants are scarce. The flea beetle has been charged with this wholesale destruction but we can get ahead of it with a little Paris green. It is after the danger from the black skippers is about over that the other enemy commences. It did not trouble early cabbage but has done its work during the past six weeks. Is there a remedy?"

[We have no knowledge, from the description, of what this root insect can be. The matter is worthy of further investigation.—Ed. G. M.]

PRECOCITY OF PEACHES.—Mr. Lorin Blodget, Philadelphia, says: "My peaches are likely to fail in a year or two. They are ripening in August, when not due until late in September. The delicious 'Miss Percival' is very fine, but ripens too soon. I fear Mr. Rutter's work is true, and that I cannot cure the yellows by fertilization."

[This brief item is an interesting contribution to an idea fast gaining ground with intelligent peach

growers, that the many contradictory testimonies in regard to the earliness of peaches, may be explained by the condition of the trees. It is beyond dispute, that when any tree is injured, the fruit matures earlier than it would do otherwise. This is the foundation for horticultural practice of ringing a branch. Now, anything that impairs the vital powers of a tree, must have an influence on the precocity of the fruit. We do not always see the influence of insidious disease, and a tree apparently healthy may have within the germs of unhealthfulness sufficient to affect the period of maturity in the fruit. In the case of the yellows in the peach, this is certainly true. The disease is there a year before there is any appearance thereof to the general observer. Once in awhile we are made aware of the presence of the disease by an arrested and frowzy-looking branch, pushing out late in the growing season from the lower part of the tree trunk. A tree in this stage, healthy enough to the eye, would no doubt produce earlier fruit than heretofore; and so it would from any other depressing influence on the growth force.

In short, it is coming to be an accepted doctrine, that when any unusual earliness is claimed for an early peach, we must be sure there is no lurking disease at work, before we are sure that the earliness will be permanent.—Ed. G. M.]

PURPLE PEACH.—"B.," Colora, Md., writes: "I send you a few lines on two subjects that may be of interest; if not, they need not be noticed. One is a Seedling Purple Peach—so I take it—growing by a roadside. The color is as dark as the one that has been propagated by buds for several years, and this has the vigor of a seedling that the old one now has not. Is there any value in these as ornamental trees that will make them worth propagating now? I have not customers for many but it may be of use to others in the trade."

[The original purple-leaved peach, which was found on the battle-field of Fort Donelson, has the most worthless clingstone fruit a peach could possibly have. Its sole value lies in its purple leaves. A variety which would also have good fruit would possess a double value, and it would be worth while to see what another purple seedling would do. —Ed. G. M.]

FORESTRY.

EDITORIAL NOTES.

FORESTRY IN ENGLAND.—Sir John Lubbuck is endeavoring to have a School of Forestry established in England. He says there are 2,500,000 acres of woodland in England. Mr. Courtney, of the English Department of Woods and Forests, thinks there is not a very large opening for a school of forestry in a small country like England.

FRAGRANCE OF ABIES DOUGLASII.—Mr. T. D. Fish tells *Forestry* that the grateful odor of the Douglas spruce should make it class with sanitary trees.

INVERTING FENCE POSTS.—Professor Beal finds no difference between posts set the way they grow, or upside down, in so far as their longevity is concerned.

RED GUM.—Professor L. Johnson, of Holly Springs, tells the *American Journal of Forestry* that the "Red Gum" is simply the timber from old trees of the Sweet gum, which is red from age; though sometimes the timber will remain white even when the tree is old.

TREES OF TEXAS.—Mr. T. V. Munson contributes to the *Journal of Forestry* a valuable list, with observations, of the trees of Texas. There are one hundred and eighteen species in all noticed. Very good for one State, though perhaps some of these will be found but mere variations of other species when more particularly examined.

FORESTS OF BANANAS.—Under the heading of "Arboriculture" in the *Boletin de la Sociedad Agricola Mexicana*, published in the city of Mexico, is a treatise on the culture of Musa ensete. It refers to the extensive culture of this species of banana in Abyssinia for the excellent fibre it produces, and believes forests of it in Mexico could be planted for the same purpose with great profit.

MAHOGANY.—The *Boletin de la Sociedad Agricola Mexicana* says this is native to the island of

Cuba, growing about half way up the sides of the high mountains. Its botanical name is Sweitenia mahogoni, and its native name Caobo. It is getting scarce in the Antilles, though there are some attempts at forest planting of them. They are set from thirty to forty feet apart. It is much used at home as well as for exportation. Its quality varies greatly with the altitude at which it grows.

A LARGE SILVER FIR.—The following, says Mr. Robert Coupar in the *Journal of Forestry*, are the dimensions of a gigantic specimen of the Silver Fir which is growing within four hundred yards of Kinnaird Castle, Forfarshire, the seat of the Earl of Southesk. It is about 80 feet in height, and measures 22 feet 6 inches in circumference of stem at one foot from the ground; measuring 14 feet 11 inches in girth at three feet from the ground. At five feet from the base a large limb springs from the stem, measuring 9 feet 3 inches in girth at a foot from the point of junction. Excepting this large limb the tree has a clear stem of about 18 feet in height to where it divides into several limbs, forming a large branching top. The spread of the branches averages about 56 feet in diameter, having an entire circumference of 176 feet, and forming a fine shapely head.

One in Germantown, Philadelphia, less than one hundred years old, reached 100 feet high, but is now rapidly on the decline.

FORESTRY AT ST. PAUL.—In his address at St. Paul, Dr. Loring observed that in the East the natural condition of neglected farm land was to revert to forest growth, and the acreage of woodland increased under these conditions. He praised arbor days and legislative fostering, and believed that under these inducements 38,458 acres had been planted in 1882. The profit of wood growing was no longer a question. One-fourth of the whole area of the United States was yet forest. There was no immediate fear of a dearth of timber, except in the case of the very valuable White Pine. The points upon which Commissioner Loring enlarged were the necessity for new legislation for the protection of forests; the modification or entire repeal of the Timber act; legislation providing punishment for the destruction of forests; a sale of public lands to include a valuation of the timber growing upon them; forests and their management in other countries; proper age for cutting profitably; and the influence of forests upon rainfalls.

So far as the editor of this magazine could judge from a few hours in St. Paul on the day of the opening, the meeting of the Forestry Association was not as well attended as the one last year in Montreal, but accomplished good work; and it was a source of much regret that the arrangements of the editor did not permit him to remain longer.

Among the useful work were the usual number of impracticable suggestions, of which the following is a sample, it being a resolution offered by Mr. Miner, of Illinois: That this Forestry Congress earnestly urge as soon as practicable the introduction of both the science and the art of forestry in the public schools.

In many public schools an average of ten different studies a day are taught in the primary departments, and these are about five too many, without adding more. Practical educators are endeavoring to cut down instead of adding to public school studies.

SCRAPS AND QUERIES.

DURATION OF RAILROAD TIES.—An esteemed Western correspondent says: "I picked up an arrow head in the nursery and that reminded me that I sent you one from Kansas that did not reach you, so I send this in place of it. If I recollect right you like living Indians; I like them dead. I attended when the remains of Judge McComas and his wife were brought to Fort Scott a month ago, murdered by Indians from pure cussedness, and I have seen so much of this in the past forty years that I view them much as I do dogs that kill sheep. Probably I am all wrong, but I can't help it. Page 147, May number of MONTHLY, says when railroad sleepers are properly treated they last a century. This would be rather hard to prove; for I recollect when a small boy going with my father to see the 'iron horse,' the first one Geo. Stephenson put on a colliery railroad. My father was a millwright and worked a number of hands on the machinery of Lord Ravensworth's collieries when George Stephenson attended one of the engines.

"If I recollect right, railroad sleepers were not used then, and as that was not one hundred years ago there cannot be any specimens to show that they will last one hundred years. It would depend in a measure, I should think, on the kind of timber that is prepared, about the time it would last. It does not seem to me that any preparation would give the poplar the strength of the oak. I had a good laugh with the boys on reading your comments on Forestry Associations. These convention foresters write us letters telling us how

much they are doing for us, but we don't see it, and with the exception of Jos. S. Fay and Dr. Warder I cannot bring to mind any one of them that I ever heard of planting a tree."

[The Indians simply have the editor's sympathy, and they afford excellent material for the study of the human race. Our troubles with them began from treating with them on wrong principles. For the sake of peace, we commenced to buy from them what they never owned. The only right to land comes from society, not from nature—and is based on the owner doing something to it which shall benefit the community. Running over ground, and hunting over it gives a man no more right to it than has the buffalo or the rabbit which he hunts. For peace sake we pretend they own it, give them a few red rags and a string of beads,—and profit hugely by their simple ignorance. They find out as they grow wiser that they have given away empires for a song, and they feel just as other people do, who learn that they have been fooled. It is all very well to point to the treaty and to demand that they stick to it. Tell a drowning man that he bargained to take the risk,—or preach to a starving man that he must not steal! The writer of this has just been among the Flatheads. Here is the same old story. They have been induced to sell "their" lands. The price was made to look very large. They are already beginning to feel that they cannot possibly live on the price. Their land is gone, their game is gone, the "agency" cannot possibly keep them. Is it natural to suppose they will lie down and die? We have not seen any whisper of it in the papers yet, but as sure as fate there will be the usual trouble with the Crows, Flatheads and other "savages" of Dakota and Montana. Innocent people will suffer, as it has always been, for the sins of the race. Of course we must not permit this. Indians must be shot and killed when they interfere with innocent individuals. There is no help for it—but for all there is our sympathy for the poor benighted creatures on whose ignorance our own people have so richly traded.

Looking at the paragraph on sleepers referred to we are unable to account for how it got there. We are usually extremely careful to give credit to every one, and seldom fail in this,—but that paragraph is evidently founded on something outside of the editor's personal knowledge, and should have had proper credit given to it. It really looks as if it was a part of some essay before a forestry association. Our correspondent's remarks on it are just and timely.—Ed. G. M.]

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

FRESH-WATER SPONGES.

BY EDWARD POTTS, ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

One purpose of this chapter is to give to the uninitiated some idea of the appearance of fresh-water sponges; to suggest where they should be looked for and when it is best to collect them.

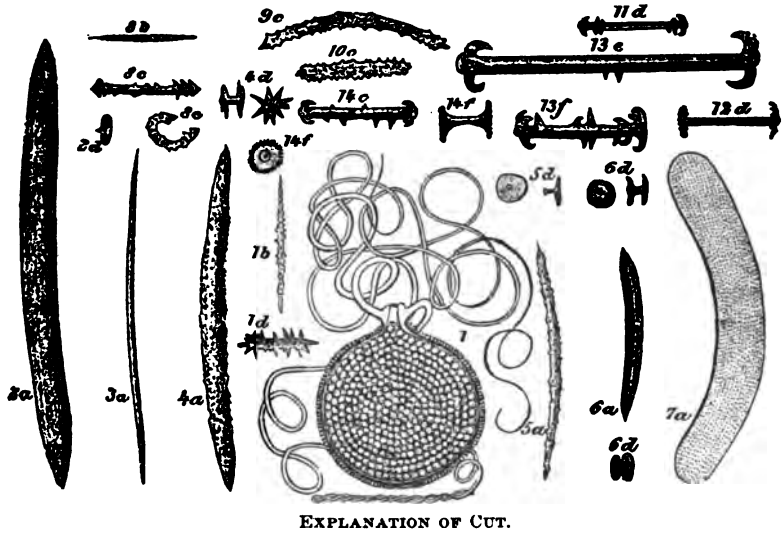
It seems to be a fact that very many persons, not excepting some of scientific tastes, are unaware of the existence of sponges in our fresh waters. This may be partially explained by the further fact that in England, and throughout Continental Europe, the keen eyes that for years past have been searching every body of water for its minuter organisms, have thus far failed to discover and describe more than two species of sponges. The zeal, therefore, enlisted in the search for them has been far less than the puzzling character of their organization—upon the border land of animal and vegetable life—and the beauty and quaintness of form of some of their component parts would seem naturally to invite. It is to be hoped, however, that the far richer fauna which has already been developed in America, with the strong probability of a considerable increase in genera and species in the near future, may stimulate observers to aid in this interesting work.

It is not the present intention of the writer to give either a scientific or popular description of these sponges; but only by a few words to help those whose interest may be awakened in the subject, to seek them intelligently and to recognize them when found.

First, then, all fresh-water sponges which have been described at the present date are of a sili-

cious character; that is, their skeleton structure or frame-work does not consist, as in the familiar marine sponges of commerce, of an elastic network of tough fibres—but of lines of fasciculated flint-needles, about one one-hundreth of an inch in length, so arranged as to form a loose intertexture, penetrated by canals, and supporting the sponge-flesh. When crushed, therefore, this texture is permanently destroyed and will not resume its original shape. The sponge-flesh, so called, is a thin slime covering the spicules and lining the canals of the living organism having a peculiar and not unpleasant odor, when fresh, but betraying its animal nature by an extremity of foulness when the dead sponge has been kept a few days in water.

Many of the species, native in this country, appear as mere incrustations of varying size and shape, and are from less than a line to an inch or more in thickness. Their surface, smooth, or more or less tuberculated, is, in some species, supplemented by a higher growth of branches or finger-like processes, frequently several inches in length. In color they vary from nearly white to the most vivid green, in an almost exact ratio to the degree of light received. The slimy growth of Conervæ occasionally seen upon the bottom of pools and streams, or dense masses of water-moss, may momentarily mislead the collector; but a pocket lens will reveal to him at a glance the minute leaves of the moss, or the delicate green threads of the algæ; while in the true sponge he will hardly fail to see the characteristic pores penetrating its surface and to detect the fine points of numerous projecting spicules.



EXPLANATION OF CUT.

The accompanying figures are drawn from nature by the aid of the camera lucida and represent the relative sizes and shapes of like parts of several sponges. The statosphere is magnified about 35 times, the spicules of the skeleton, marked *a*, 150 times, all other figures 225 times. **1.** Carterius tenosperma—Section of statosphere. (In the other genera these are without tendrils.) *b*, dermal or flesh spicule; *d*, birotulate spicule of outer coat of the statosphere. **2.** Parmula Batesii—*a*, skeleton spicule; *d*, parmuliform spicule of statosphere. **3.** Spongilla montana—*a*, skeleton spicule. **4.** Meyenia fluviatilis—*a*, skel. spicule; *d*, birotulate stat. spic. and disk of rotule. **5.** Tubella Pennsylvanica—*a*, skel. spic.; *d*, inequibirotulate spic. of statosphere and disk. **6.** Meyenia Leidii—*a*, skel. spic.; *d*, birotulate stat. spic. and disk. **7.** Uruguaya cora lloides—*a*, skel. spic. **8.** Spongilla lacustroides—*b*, dermal spic.; *c*. stat. spic. **9.** Spongilla fragilis, var. minuta *c*, stat. spic. **10.** Spongilla fragilis, var. calumeti—*c*, stat. spic. **11.** Meyenia crateriforma—*d*, birot. stat. spic. **12.** Meyenia Everetti—*d*, birot. stat. spic. **13.** Heteromeyenia argyrosperma—*e*, *long*, *f*, *short*, birot. stat. spic. **14.** Heteromeyenia Ryderi—*e*, long; *f*, short; birot. stat. spic.

The particular feature distinguishing fresh-water from marine sponges is the presence in the former, when mature, of the reproductive bodies known as statoblasts or statospheres. These are nearly spherical, light or dark brown, generally easily visible by the naked eye, and occupy positions at the lower surface or throughout the mass of the sponge. They should be carefully looked for and gathered with the specimen, as it is upon the form of the spicules encrusting their surface, that the classification of fresh-water sponges principally depends. Either very early or very late in the season minute groups of these statospheres may often be found, unaccompanied by the skeleton spicules and slime-like flesh of the sponge, and it is well worth while to gather and preserve them.

These sponges are found growing upon any supporting substance except mud, and at every depth beneath the surface of the water; but they affect chiefly the under and upper surface of stones and timbers, the sides of piling, and of submerged stumps and branches. The stems and roots of water plants are often coated and matted together by them. As the silting of earthy matter into their pores would soon suffocate them, we find in standing pools the most flourishing specimens attached to the under side of stones or water-logged timbers, which shield them from the intru-

sion of the heavier silicious particles; whilst in clear lakes and rapidly flowing streams they plant themselves boldly upon the upper surface of stones in the full sunlight.

A further hint as to the bodies of water which favor their growth may be found in the fact that three species, one of them the most peculiar of American forms, were found in a stream a child could step over; five were gathered at one time in the submerged cellar of a burnt mill; while the timber-work of the dams upon some of our largest rivers has furnished rich collections; so that there is scarcely a situation where water stands or runs, excepting upon the muddy bottoms of shallow streams or mill-ponds, where sponges may not be hopefully sought for and frequently discovered.

The best season for collecting sponges varies with the different species, but may be generally stated to be from the last of July to the middle or latter part of November, when the spicules and statospheres are likely to be fully matured. They may be preserved in dilute alcohol or dried by a few days' exposure to the air; in which condition (as the personal "application" of the foregoing sermon) the writer would be very happy to receive specimens from all parts of this and other countries. If packed in light boxes, strong enough to prevent crushing, the postage by mail (4th class) will be but one cent per ounce, which the writer will gladly repay, with any other reasonable expenses. He will acknowledge their receipt, giving names of known species and full credit to the collectors of all that are novel or interesting. Every gathering should be marked with its habitat, the date of collection, and the name and address of the sender.

A principal motive for the preparation of this at the present time is found in the desirability of securing as full a representation as may be, of the American forms at least, in a monograph now in course of preparation:—but contributions will always be very acceptable. Address,

EDWARD POTTS,
228 S. Third St., Philadelphia, Pa.

EDITORIAL NOTES.

THE STUDY OF SPONGES.—We take pleasure in reproducing in this number the text and illustrative plate of a circular entitled "Fresh-water Sponges," recently issued by Mr. Edward Potts, an active member of the Academy of Natural Sciences of Philadelphia.

To the enthusiastic student there is probably no field of scientific investigation which offers a greater prospect of novelty and interest than the study of the flora and fauna of this country as represented in the microscopic life of its lakes and streams. It is a singular fact that while hundreds of naturalists, amateur and professional, have devoted years to the collection and study of diatoms, the higher algæ, the rhizopods and, as we think them, the far more interesting rotifera, polyzoa, &c., hardly any appear to have observed or collected the class of animals described in this article. And yet, occupying fixed positions as there described, and easily recognized by the naked eye, they are far more readily discovered and collected than most of the above-mentioned objects. Simply drying or bottling them in alcohol preserves them for future study; the process of preparation for microscopic investigation is quickly learned, and the forms of their resultant elements, as hinted at in the accompanying plate, are wonderful in their variety and grotesqueness.

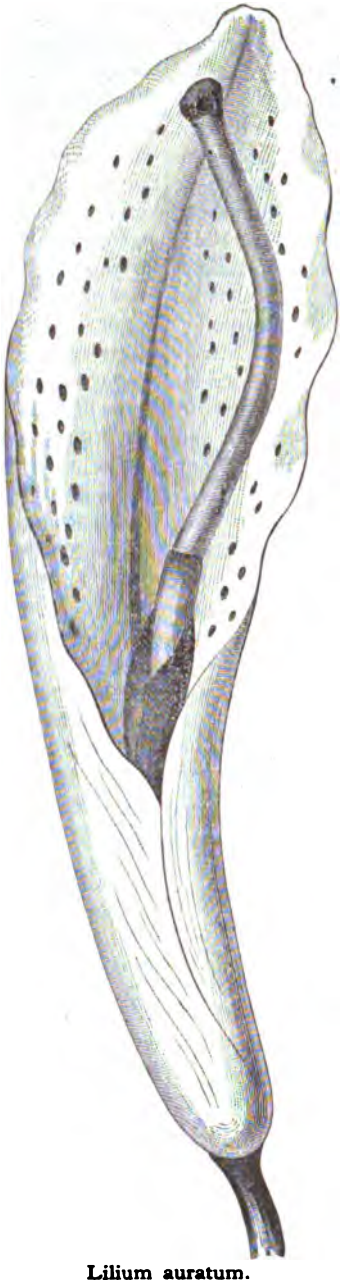
It is greatly to be hoped that many of our young people whose scientific instincts lead them to the exploration of the ponds and creeks of their respective neighborhoods, as well as those who haunt our lakes and rivers through the summer season, for the enjoyment they find in boating and bathing, in fishing and shooting along their shores, may be inspired by this article to assist Mr. Potts in the preparation of his intended monograph by forwarding to him specimens of such sponges as his description may have taught them to recognize and appreciate. The season for collecting is at its best; even now (September 1st) the slime-like flesh of some species, already mature, is beginning to decay; their spicules will soon be scattered by the autumn floods, and a few seed-like statoblasts, the winter eggs of the sponges, will alone remain to show where they once had been.

ECHINOCACTUS SILERI.—Just before leaving home we had a cactus from A. L. Siler, which though with long mammæ was evidently an Echinocactus, and which we could not identify with any described species. On our return we find Dr. Engelmann has named it E. Sileri. As it bloomed with us the flower was greenish and not very showy, but the plant is very pretty and will be very welcome in collections of half-hardy cacti.

THE BANDED RUSH.—Mr. Nicholson finds this is not a rush (Juncus) at all, but a member of the Sedge family, Scirpus Tabernæmontani, the green form of which is indigenous to Britain as well as to Japan. The leaves are round and rush-like, and

the mistake a natural one. The plant was introduced to America by Mr. Thomas Hogg in one case, and also by the Japanese during the Centennial in Philadelphia. The writer has a plant left by the Japanese, and one shoot is in flower simultaneously with the reading of this note of Mr. Nicholson's, and proves that he is right in the case of this stock, as well as in that introduced by Mr. Hogg. It might be called a banded bullrush.

A MONSTROUS LILIUM AURATUM.—Mr. Louis Bohmer sends us from Japan a singular sport of Lilium auratum, from which we have taken a single flower for illustration. It will very much interest morphological botanists, while as a horticultural curiosity it will be generally admired.



Lilium auratum.

MYSTERIES OF EVOLUTION.—Principal Dawson, in his Minneapolis address, makes a temperate, but powerful protest against modern views of evolution. He goes to the beginning and comes toward us, while those whom he antagonizes start from the other end. He contends that geology shows in its earliest palaeontological remains as perfect development in some of the earliest known creatures as there is at the present time, and that so far as research has yet been successful there are no known forms from which these beings could have sprung. In other lectures Dr. Dawson has shown that the oldest human crania yet discovered show as great a state of human development as could be gathered from a knowledge of any human skull of to-day; and again he contends that some of the earliest fossil plants have almost their exact counterparts in existing species, and that the supposed law of perpetual change is controverted by these instances. It is very difficult to eject Dr. Dawson from this chosen field. Philosophy might desire to ask him if he believes a pair of each species were created as adults, and then turned loose to increase and multiply; and whether in view of the carnivorous habits of many of them, numbers would not be obliterated before the species were barely born; or, if a number of individuals of one species were to come suddenly into existence as adults, whether geological science has indicated the probability of any law existing at that time by which such an event might be brought about?

From the mere scientific standpoint, and aside from revelation, Principal Dawson could at best but answer, that he did not know. But the evolutionist who starts from the modern end, points to the facts about him and shows that there is change now, and that what would surely be regarded as species, did we not know their origin, have been derived from a common stock, and that these variations once introduced, have all the powers of permanent reproduction which the best recognized species have. In this column it is the object merely to indicate the lines of scientific progress. As it seems to us, scientists of the Dawson school simply say, we cannot say how, looking at the dawn of life, species first came to exist; while the evolutionist says that, looking at the present day, we can.—*Independent.*

PULPIT HORTICULTURE AND BOTANY.—Those who take a deep interest in Horticulture and the Natural Sciences, must have often smiled at pulpit efforts to illustrate remarks by references to such studies. The whole sermon is rendered ridiculous by the speaker evidently not knowing what he is talking about. It is rare,

however, that any one ventures to tell the plain truth to these well-meaning people. But Prof. Goodale has recently had the courage to do so, and this is what he says:

"But, as this talk with you embodies merely the expression of my personal views, for which I should not wish to hold others responsible, you must allow me to state very frankly that, while I do not see the slightest necessity for your preaching about either the question or the answer, I do sincerely believe that every preacher in these times should be conversant with the methods of study by which this surprising change (evolution) in the attitude of hearers has come to pass. Instead of thinking it your duty to study science for the sake of preaching it, I should advocate your studying it in order that you may have the wisdom and courage to let it alone. In the half-hours to which you are now restricted in your sermons you have barely time to preach the gospel."

SCRAPS AND QUERIES.

DOUBLE PEACH LEAF.—"J. W. K.," Denton, Md., sends a leaf of a peach which is two-leaved at the apex, and but a single leaf at the base.

The manner in which nature goes about to make these monstrosities is not very clear; and the reason still less. All we can say is, that in making things she seems to have no exact mould by which everything is cast out, but sometimes goes a little beyond or a little short of what is needful to make the perfect thing.

GEOGRAPHICAL RANGE OF THE BIRD'S-FOOT VIOLET.—Mr. Samuel N. Watson, Red Wing, Minn., says: "I notice a slight inaccuracy in your book 'Wayside Flowers,' and as I have so much enjoyed your delicate thoughts, I venture to acquaint you with a fact which comes within the range of my observation. In speaking of the 'Viola pedata,' 'Bird's-foot Violet,' you mention as a limit of its Western range, Wisconsin, and also that it does not occur in any quantity till you reach the southern border of the State. I found them in great profusion still farther west, and much farther north, in Faribault, Rice county, Minnesota, during the past month of May."

FLOWERS OUT OF SEASON.—"L. B. C.," Richmond, Ind., writes: "In my yard stands an old dying cherry tree that has produced a few flowers during the past two weeks. I have often seen fruit-trees bloom in the fall, but in the middle of summer, it occured to me, it was an unusual circumstance; how is it? I enclose you a single flower I just picked for your edification."

[We may get some clue to these curios by noting other things. For instance, if a large pear tree lose its leaves early in the autumn, either by caterpillars, or by leaf blight, it is almost certain to bloom before winter and not wait till spring as it should do. Again, if a horse-chestnut loses its leaves in the same way, it will also bloom in the autumn, instead of waiting for its regular time. We see that we are getting near the ability to generalize, when we consider these things—but yet we cannot quite reach the disturbing cause. We can only say, when a flower appears out of season, that it has been retarded or accelerated, as the case may be.—Ed. G. M.]

TUBERS ON POTATO PLANTS.—"P. N. McI.," Bookton, Ontario, writes: "I send you, by mail to-day, the top of a potato plant in which part of the stem has become tubers or potatoes. As this is not a usual thing, a notice and description of it might interest the readers of the MONTHLY."

[This sometimes occurs, and is taken advantage of by the teachers of Morphological botany to show that a potato tuber is in reality only a thickened branch. At the base of almost all leaves along a branch there is a bud, known as an "axillary bud," which, when it grows, becomes a branch like its parent. In the case before us, the tubers are in all stages, from a simple bud in the axil, in some cases, to tubers as large as hazel-nuts in others, with the axillary buds, and in some cases leaves on them. The under-ground tuber developes in the same way from an axillary bud, the only difference being that it pushes clear out from its parent axil, retaining an attachment only by a thread, or, technically a stolon.—Ed. G. M.]

THE BOTANY OF TEXAS.—"J. W.," Houston, Texas, says: "Can you recommend any work for the south-western flora of Texas? Mrs. Young's so-called 'Botany of Texas,' is absolutely worthless."

Mrs. Young's book served a good purpose in its day; but, like so many similar works, it has been outgrown by the knowledge of the flora. As Dr. Asa Gray has in hand a work on the whole flora of the North American continent, it is not worth anyone's while to issue a separate flora of Texas, and so there is nothing to do but wait. Dr. Gray has, some years now since, issued one part of this work, and all the plants then known in Texas, referable to the orders that part treats of, gives, of course, all the Texan plants. This, with Mr. Watson's Bibliographical Index to tell us in what scattered papers the descriptions of Texan plants are found, are about all the guides to the Flora of Texas which can be had at present.

LITERATURE. TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

EDITORIAL LETTERS.

ASTORIA, OREGON, July 31st, 1883.

I was very much surprised at Alaska. In common with many other people in the East, I had come to look on the seven millions or so which the United States paid Russia for Alaska, as so much money all but thrown away—and even the reports of government officials as given in public documents, written even in the interest of the purchase, give no good sort of an idea of the great value of this far north-western corner of our dominions. I am satisfied that the seven millions are not thrown away—nor would twenty millions have been—and I feel that our country owes a debt it can never repay to the sagacity of W. H. Seward for negotiating this strip of land for us.

I had supposed it was a miserable country, fit only for fish and seal-skins, and locked up in ice and snow for the best part of the year. I found a country far superior, in many respects, to Switzerland; and with a climate and elements of greatness, at least equal to those which have given Great Britain and all her commercial and industrial prosperity, so great an elevation in the history of the world. Precisely the same conditions exist here as in England. That part of the world is in a high latitude, but a warm stream of water rushes against its shores from the Gulf of Mexico, and thus gives it a temperature and an atmospheric moisture so favorable to a good many products. Alaska has just such a warm sea poured around its Western face, by the sea of Japan, and the results are just about the same. The summer temperature is just about as high, and the temperature in winter goes no lower than in England. We are told that it is very wet there, and that it always rains. Well, we were four weeks going from place to place through it, and we had but two rainy days in all that time! Writing this as I am in Oregon, I have no exact data to hand, but I believe our goings to and fro over it, could not have been short of 2500 or 3000 miles—and we reached a point as high as the mouth of the Chilcat River, which is little short of 60°—north latitude.

Chiefly because there has been no government given to the territory by Congress, and there is no law to sell property or defend life—and no one knows why, except that it is surmised not to be to the interest of one or two powerful commercial companies to permit the government to do it,—there can be no settlement of white men there; yet the attractions of the place have drawn about 500 or 600 white men. There are perhaps 40,000 or 50,000 Indians, a large number of whom have been civilized, and work and cultivate to some extent as white men do. We occasionally met with little garden patches, and thus saw, by actual observation what could be grown there. There was however one particularly nice garden at Wrangel, cultivated by Colonel Crittenden, formerly of the Confederate army, which showed very well what could be done. There were cabbages, turnips, beets, peas, potatoes, and indeed one might say in a few words, all the vegetables that would do well in the open air of England. Col. C. had found onions and spinage not to do well; but I feel sure this is from some non-adaptiveness, on the part of the cultivator, rather than from any serious objection on the part of soil or climate. Cauliflowers do enormously well. The Indians, according to Mr. Crittenden, are very fond of raising these things. He often makes them gifts of potatoes, turnips, and flower seeds for their wives and children, which they take hundreds of miles, sometimes into the country, and return the next year to him, with some of the products of the soil to show him that they had appreciated and profited by his kind thoughtfulness. These Indians are very grateful for kindnesses. One may travel through their whole country safely on this platform. It is only when one comes in conflict with the customs engendered by their theological notions, or treats them with what they consider injustice, that what is called their savage nature retorts in cruelty on the white man. Of course, their views of justice are often unjust, but one should endeavor to put himself in their place before running a tilt against their desires.

The destruction of one of their villages last spring, by the United States ship "Adams," has embittered them somewhat. For instance, the Indians believe that when anyone is killed intentionally or accidentally, his spirit does not rest in

peace till the person by whom death was caused, or his friends, pay over to the relatives of the deceased person 200 blankets—a blanket being the Indian measure of value, meaning $3. An Indian was killed by the accidental explosion of a mortar, and a demand was made on the United States for 200 blankets accordingly. But they were given to understand that United States laws were different from the Indian laws, no blankets or $600 could be given. The Indians then seized two white men, and held them as hostages till 200 blankets were paid. The commander of the ship then sent word that the men must be restored, and 200 blankets besides, within a certain time or he would blow their village down. It did not come within a certain time, when the commander sent word that he would now demand 400 blankets. The Indians, getting frightened at the big ship, returned the two men and two hundred blankets—but the commander sent word that "their great father in Washington always kept his word, and having demanded 400 blankets must have them." As they did not immediately respond, the ship opened fire on the poor wretches, and the village was blown to pieces.

I suppose it was right to show these creatures that their great father is the most honorable of all beings, in keeping his word—but would it not have been better to have met their very humanitarian demand, in the first instance, in a more conciliatory spirit? Better have spent two hundred blankets, in the shape of $600 worth of seed potatoes and turnip seed, than some thousands, probably, on powder and ball. Some of the settlers are very fond of flowers and have occasionally nice things in their gardens. One lady, in Sitka, showed me, with much elation, a nice growing plant of Hydrangea paniculata, which she said came by mail from Dingee & Conard nursery—only think of it, six thousand miles safely by mail! What will our English friends think who are now and then discussing in their journals the wonderful fact related by some correspondent, that plants have actually come three thousand miles across the Atlantic in safety.

The wild fruits of Alaska are very varied. I will not give the botanical names with certainty, as, at this distance from books of reference, I may not identify them correctly. The crab-apple has ovoid fruit, about the size of a medium cherry. I could not learn that it was used except in the form of a preserve. I found the alpine strawberry, Fragaria vesca, just over the boundary, in British Columbia, and I suppose it is also common in Alaska. But there is another species I have never collected before in the United States, with dark shining upper surface to the leaves, and silvery white beneath. The stems supporting the cluster of fruit, are of immense length—eighteen inches in one instance—and the fruit depressed-globose, and pale, say greenish-red. I suppose it is the Chili strawberry. The Indians collect them. They will sell anything they have. For trial I asked a young girl to sell me her silver ear-rings, the silver ring which they wear through their nose, and the silver pin which, after they become adults, they wear through their lower lip. To my surprise she sold them to me for "four bits." After some words in her own tongue with an older woman she returned with the half dollar, and by signs demanded them back—but the offer of "two bits" more secured the jewelry. Wherever I could I endeavored to get the Indian names of the fruits and vegetables used. Of an old Indian woman who was gathering these strawberries I asked the name, but she would only offer a small shell full and say "one bit." This was all the English she knew as a general thing, except "half dollar." Our people soon learned a little in this line also, and when an Indian asked a dollar for anything he or she had to sell, and our party would say "sik-kum tolla" (half dollar), it was evident by the contemptuous turning of the Indian on his heel that so much of the language had been learned thoroughly and well. The raspberry here most prevalent is the Salmon berry, but though a raspberry botanically the flavor is precisely that of our blackberry,—not as good, however, as a first-class Lawton. A singular fact is, that while our raspberries and blackberries are normally black or red and sometimes change to salmon (white)—here the normal color is salmon and the exceptional changes red. In some places the red departures are not uncommon. There is a species of Black cap raspberry here which has quinate leaves,—sometimes the five leaflets arranged in a pinnate manner. Perhaps it is R. leucodermis. The fruit is about the size of our best Black caps, and to my mind the best wild fruit in the territory. A white flowered species, probably Nutkanus, resembles our flowering raspberry (odoratus) and fruit is of about the same quality. The common blackberry has a much smaller fruit than ours, with the leaves gray like the Black caps. I suppose it is Rubus ursinus. There are numbers of species of currants, two of which of the black currant class are much prized. One of these is very strong. In Pyramid Harbor, near the

mouth of the Chilcat, I came across a plant that was ten feet high; the leaves were as large as luxuriant Concord grapes, and the racemes of fruit six inches long. The Indians pound the fruit up, with what I suppose to be grease, and dry it in cakes. Then they take a piece, put it in water and whip it up, when it looks like purplish ice cream. They seem very fond of it. There are many species of wild gooseberries—one with very large fruit—fully as large as the best English gooseberries, and the surface so clammy that a large berry will almost stick to the hand without falling to the ground. They are deep red, and very tempting. I tried to taste one, when a strong flavor of formic acid told me I had eaten an ant with the berry. I found numerous insects all over the berries afterwards. I can imagine that a leaf may have these glands for the purpose of catching insects to use as food—but what a ripening fruit wants with such a covering is more than I can tell. It keeps insects from eating them.

Bears abound here, and they are very fond of gooseberries, as I myself can testify to, by seeing one black fellow daintily pulling the branches down with his claws, and picking them off with his mouth—this was a small black gooseberry, as large as a pea—but these clammy fruited kinds were loaded where bears abound, so I suppose they are not touched by them. The flavor is not much to boast of—something like a cactus fruit. There are several kinds of huckleberry and a cranberry. The huckleberries are fair. One with a bright coral-red berry, Vaccinium parvifolium perhaps, is extremely ornamental; but not as good to eat as the others. The Salal berry is Gaultheria Shallon—Shallon being the name as originally pronounced, or supposed to be pronounced by the Indians, among whom it was first found—though "Salal" is the name they use now. Our Gaultheria procumbens, or "Teaberry," has an aromatic taste which this has not. Indeed, it is slightly acidulous; and does not seem to be a favorite among the bears. They like sweet things, and a lump of white sugar is a capital lure towards the bear-trap. Usually this Gaultheria grows but about two feet high—but in some parts of Alaska, I saw them six feet or more high, and making dense thickets, through which it was impossible to pass. I found a few bushes of the Amelanchier—the June Berry or Indian cherry, as large as our best huckleberries, quite as good and just as black—on the borders in British Columbia, and I suppose it penetrates to Alaska also. A wild cherry also, is in the Dominion, which may go to Alaska.

This was all the real fruit I saw wild, though there are numerous berries and fruits eaten by the Indians. Indeed they eat nearly everything that grows. I met with an Indian woman gathering an armful of the young tops of the Salmon berry canes. I made signs to know what she did with them; she laughed and put the ends of the shoots between her teeth, and I suppose they cook and eat them. They always looked on curiously at my gathering plants for my herbarium, and anxious to know what I did with them. It was difficult to make each other understand, in the absence of all oral language. Once, in desperation, I "stretched" the case by pointing to myself and saying, "me Doc-tin,"—I had learned that much Indian, as their name for medicine man. Like all "stretches," this one only got me into further trouble, for they would pick at my handful of plants, and want to know what this was good for and what was the good of that, till I became convinced I had better be a "Doc-tin" no more, and shook my head thereafter when my botanical pursuits were questioned.

H. B. ELLWANGER.

BY JOHN THORPE, QUEENS, N. Y.

In the death of H. B. Ellwanger, we have sustained a national loss. It was my good fortune to be intimately acquainted with him and his untiring efforts to produce new varieties of roses. No student ever worked more conscientiously; no raiser of seedlings ever waited more patiently for results, nor could be more anxious that others should be benefited by his successes, or prevented from disappointment in his failures.

A little more than a year since, Mr. Lonsdale and I spent half a day with him at his home, where he showed us the different crosses he had effected on hundreds of flowers; how modestly he hoped for results, discussing the probabilities and possibilities of each. With the same feelings we viewed and hoped among his seedlings that had not yet flowered. Again, when we came to others that had flowered, how faithfully he pointed out their defects or praised their good features. With what pleasure and hope he sowed his seed last winter. The day afterwards I received a long letter with numbers of seeds and names of each cross sown; a little later another letter saying, his babies had begun to grow nicely; only in June last, when at New York, how he described the distinctive variations in the foliage of his baby roses; what we might hope for and what additions would be valuable. In his Rose Book, how honestly and

faithfully he depicted every variety; giving each and all their true character as seen by him, placing it in the very highest position amongst American publications. In his private character there was nothing but to admire. Let me quote Horace Smith, who says:

"In the sweet-scented picture, heavenly Artist,
With which thou paintest nature's wide-spread hall,
What a delightful lesson Thou impartest
Of love to all."

Such was our lamented friend.

EDITORIAL NOTES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

NOMENCLATURE OF BOTANY.—Prof. A de Candolle, of Geneva, has published some "new remarks on the Nomenclature of Botany." He was editor of the laws of Botanical Nomenclature adopted by the botanical Congress, International, of 1867, and what he says has great weight. Among other things, he points out the growing uselessness of adding the abbreviated names of authors, after the scientific names in zoology and botany. In the past, when authors might be named inside the hundred, it might be well; but now, when they may be named by the thousand, few know what the abbreviations mean; and the public are driven from the studies by the miserably long and meaningless names.

UNIVERSITY GARDENS AT BERKELEY, CALIFORNIA.—There is much talk of government experimental grounds—but if our agricultural colleges had sufficient encouragement, the State colleges would answer every purpose desired. The State University at Berkeley, in California, has started out in this line, and the visit of the Editor to these grounds was among the most profitable of all his Pacific coast excursions. Everything likely to be of any advantage to California is obtained, where possible, and thoroughly tested under the intelligent care of Mr. W. G. Klee, and his reports are among the most valuable made to Californians.

POMOLOGICAL HONORS.—Our friend, J. E. Mitchell, has reason to congratulate himself on receiving special honors at the late Pomological Convention in Philadelphia. In a circular issued, every man on the list is charged with being an "Esquire," except "J. E. Mitchell." Out of the twenty-two names on the circular twenty-one are taxed with the enormity, Mitchell only having escaped. It did not suit the malignity of the great enemy of mankind to merely say the "following Esquires are on the committee"—but that there might be no escape, as to the identity of the individuals, "Esquire" is repeated twenty-one times in the one paragraph, J. E. Mitchell only, escaping the implication.

What the gentlemen so involved intend to do in the matter, we have not heard. Mr. Mitchell certainly deserves some honor for the good work he did in preparing for the convention, but is it fair that he should alone be distinguished in this handsome manner? In another circular, however, he got charged with being an "Honorable," and perhaps the great enemy of the human race thought it was but fair to let up on him after that.

H. E. HOOKER CO.—A company has been formed to continue the business of the late Mr. Hooker of Rochester. M. G. Hooker, E. B. Taylor, and Robert Ades, are the officers.

THE LANGDON NURSERIES OF MOBILE, ALABAMA.—These have been purchased by J. M. Rulifson, who proposes to maintain it as one of the first-class establishments of the South.

KINSEY'S NURSERIES, DAYTON, OHIO.—These celebrated nurseries will be continued as heretofore, the widow, representing the interests of her late husband.

MR. CHAS. B. OTT.—Mr. Chas. B. Ott, a very successful orchardist, of Bucks County, Pa., is among the deceased of last month. He was one of the first to bring into prominent notice the merits of the Water apple of that section, and his block of the Red Astrachan apple was quite noted for its profitable returns.

REPORT OF FRUIT-GROWERS ASSOCIATION OF ONTARIO FOR 1882.—Printed by order of the Legislative Assembly. This body has no less than 1,839 members, which shows a wonderful interest in fruit-growing and the kindred arts and sciences in the Province of Ontario. They have a winter meeting and Annual meeting, and this volume is the immediate result of the labor of the body—the remote results must be of incalculable benefit. About one-half the volume is devoted to fruit culture; forestry receives the best part of the rest of the report's attention.

THE NATURALIST'S FIELD CLUB BULLETIN OF BUFFALO.—No. 4 is before us, and seems to promise for the work a long and useful life. Botany has especial attention. There is an extended note on Aquilegia chrysantha, the yellow aquilegia, showing that Grant Allen's pleasant speculations about colored flowers being evolutions from a yellow type, are not according to facts in many Ranunculaceous plants. The other useful notes are on the flowering of Asarum canadense; on the probability of the English Pansy being a true native of this country—or rather, a form named by Michaux, Viola tenella; on a new station for the rare Clematis verticillaris; on the existence of two distinct forms of the American crab, Pyrus coronaria, with brief notes on Vitis cordifolia, Potentilla paradoxa, Erythronium Americanum, and Sisymbrium thalianum.

Botany must be rapidly growing, as a popular study, when so many periodicals give attention to botanical notes.

THE HAND BOOK OF TENNESSEE.—By A. W. Hawkins, Commissioner of Agriculture, published at Nashville, 1882. Tennessee has a Commissioner of Agriculture, and we suppose this very valuable work is issued at the expense of the State, though we see nothing between its covers to indicate that it is a State document. It has a colored map of the State, indicating where its leading mineral riches lie, tells of its agricultural products, its geographical points, and industrial statistics of every description. Information of this kind must be of inestimable value towards the prosperity of the State.

BARRY'S FRUIT GARDEN.—By P. Barry. A new edition, revised and brought down to date, by the author. New York: Orange Judd Company. 1883. The march of knowledge about fruit, and especially in fruit culture, has been very great of late years, and a work which proposes to keep up with this rapid march, and tell us all that it is important to know, will be very welcome to orchardists everywhere. No one is better able to tell of this advance than Mr. Barry—and the great favor with which the original was received, will make this new edition welcome everywhere.

A BOOK ABOUT ROSES:—By S. Reynolds Hole. New York: Wm. S. Gottsberger, 1883. An English book which has seen seven editions in its own country, is surely worth re-printing in America, where the rose is such an especial favorite. Of course there are some suggestions, well adapted to the Old World, which will be of no value in this—but the book is so pleasantly written, that any one who loves a rose will be interested in reading it, though not growing a single plant. It is simply enjoying a bouquet of "buds" to read it, aside from its practical value. It comes to us through E. Claxton & Co., Philadelphia.

GRAY'S SYNOPTICAL FLORA OF NORTH AMERICA.—One part of this great work was issued several years ago. It will delight all interested in American plants to know that the other part, which will include the very difficult Compositæ, is about to be put to press.

SPORTSMAN'S GAZETTEER AND GENERAL GUIDE.—By Charles Hallock. New York: Orange Judd Co., publishers, 1883. We have received a copy of the above from Messrs. J. B. Lippincott & Co., and find it a handy reference to all things pertaining to legitimate field sports. The work first appeared in 1877, and has now been through six editions. Since then the author has revised it, and now presents it to the public in its new form.

It contains 1000 pages, and is profusely illustrated. Gives descriptions of all game animals, birds and fishes in North America; the best methods of catching or trapping them; where they are to be found, and the easiest and shortest way to the places inhabited by them. It also tells what game is to be found in the counties in the States and Provinces. Maps of the latest editions direct the hunter, or fisherman, over the principal railroads crossing the continent. Altogether it is one of the most complete works of its kind published, and is a valuable book to every person, whether sportsman or not.

DIO LEWIS'S MONTHLY—New York: Clarke Brothers, publishers. This made its first appearance in August last, and is a large fat serial of 115 pages, yet we find nothing superfluous—except the double s's in the title—and there is a very great deal in it which will, doubtless, enlist many horticulturists among its readers.

DR. C. C. PARRY.—This well known botanical traveller, has returned to his home in Davenport, Iowa.

DR. GEO. ENGELMANN.—This famous botanist, long past three score and ten, left for his native land in June, and, considering his age, it is feared he may not return to his adopted country.

THE GERMANTOWN TELEGRAPH.—On the 1st of October this well-known Agricultural weekly passes from the ownership of Major P. R. Freas, to

Henry W. Raymond, son of H. J. Raymond in years past editor of the *New York Times*. The *Telegraph* was started in 1829, and during all these long years, has been under the sole control of its founder. It has had not only a long career, but a very honorable and useful one. Since the birth of the *Telegraph*, Germantown has been swallowed up by her younger sister, Philadelphia, which insists on calling it the Twenty-second ward; but there is yet a local pride in the old name, and though we shall miss the good old Major from the editorial circle, it is a great satisfaction that the great paper which he founded and which has so helped to make our local name world renowned, is still to be continued on, in the good work. The best wishes we can offer the new owner will be, that he may continue to have the success which the former so ably earned.

HORTICULTURAL SOCIETIES.

COMMUNICATIONS.

PRESIDENT WILDER'S ADDRESS.

Gentlemen and Friends of the American Pomological Society:

"I still live," but I deeply regret a recent disability from which I may not recover in season to be present on this occasion. Yet as you have so often declined to receive my resignation of the presidency of our association, and have provided a special officer of great ability to occupy the chair in case of my absence, I take it for granted that in this exigency you prefer, in the language of scripture, "a living dog to a dead lion," and thus to retain me, not so much for what I now can do, as for what I have done for the objects you seek to promote.

Our constitution demands of its president an address, and I, therefore, will speak to you once more in regard to the interests and objects which it has to advance, and which I deem worthy of your attention.

This is the fourth time our Society has assembled in this goodly city at the invitation of the Pennsylvania Horticultural Society, to whom, in behalf of our own Association, and in my own behalf, I again present our grateful acknowledgments for its oft repeated courtesies to us, and especially, for its constant co-operation and aid during the lifetime of our Association.

Gladly, most gladly, do we accept of these hospitalities so generously tendered to us. Happy, most happy, are we to be here once more in this time-honored city, so renowned for its schools of science, advanced civilization, and benefactions to mankind; here, at the birthplace of that immortal declaration of heaven-born principles of human rights which gave to the world the first great free republic, the most progressive, prosperous and independent nation on the globe; here, where the first society was formed for the promotion of agriculture, and the first permanent horticultural society on this continent—both of which, we rejoice to know, are here to-day in a vigorous, green old age; here, where some of the first general efforts were made for the promotion of American pomology,—efforts which culminated in the establishment of this Society, and other similar institutions,—efforts whose merits throughout our immense domain, excite the wonder and admiration of the world. Here, too, were the homes of Bartram and Mease, Landreth and Buist, James, Brincklé, and Houghton, and other pioneers and cultivators, whose labors contributed very largely to the advancement of our cause, and whose names, in connection with those of other benefactors of our Society, will be held in grateful remembrance while the blessings of rural art, the charms of nature, and the golden fruits of summer and autumn shall gladden the sight and minister to the comfort and happiness of mankind.

These worthy men, like those others who laid the foundations of our national compact, have finished their labors and gone to receive their reward. But we still live to carry out the noble designs which they originated, and thus to develop the blessings of human freedom and the wonderful resources of our land, and make it more and more worthy of the protection of an independent, enlightened, enterprising and prosperous people.

IN MEMORIAM.

We this day enter on the duties of another biennial term, and while I most heartily congratulate you upon the growth and prosperity of our Society in its beneficent influence—on what it has accomplished and is still doing—I most earnestly pray that our lives may be prolonged, our energies renewed, and our labors be crowned with continued success; but we cannot forget that death has again entered our ranks, and removed from our circle many old friends and worthy co-laborers of our cause.

During the interval since our last session, we have sustained greater losses of official and prominent associates than in any former like period in the history of our Society. In my former addresses I have endeavored to place in our records a reference to those who have been officially or otherwise actually engaged in promoting the objects of this Society, and now I have the melancholy duty of adding to that starred roll of worthy men

the names of JAMES, VICK, BRYANT, SCHLEY, PEARCE, ARNOLD, JOHNSON, HOOKER, TRANSOU, and WARDER. In this list, we number seven Vice-Presidents, a Treasurer, Secretary, and a member of our Fruit Committee.

THOMAS POTTS JAMES, the first Treasurer of this Society, who held that office for twenty-seven years, died at his residence in Cambridge, Mass., at the ripe age of 79 years. His presence always cheered our meetings, and his gratuitous services and cordial cooperation in the promotion of science were heartily acknowledged and appreciated. He was widely known for his study of the vegetable kingdom, especially the mosses and lichens of our continent, the results of which he was preparing for publication at the time of his death. He was connected with many societies for the advancement of science in our land; was Professor of Botany to the Pennsylvania Horticultural Society; one of the Founders of the American Pomological Society; Fellow of the American Academy of Arts and Sciences; Fellow of the American Association for the Advancement of Science; Member and Officer of the American Philosophical Society; Member of the Boston Society of Natural History, and of other kindred associations. In all the relations of life he was conscientiously devoted to whatever was committed to his care. In a word, he was a true friend, an upright man, and a Christian gentleman.

JAMES VICK, a former Secretary of our Society, died at his home in Rochester, New York, May 16, 1882, aged 64 years. No one has been more familiarly known to American households as a seedsman, florist, and publisher of a magazine, than Mr. Vick. He was an Englishman by birth, but he came in youth to this country. He soon after entered the printing office of the *Genesee Farmer*, published by Luther Tucker, and was associated for a time as editor and proprietor of this and the *Cultivator*, at Albany. On the death of Andrew Jackson Downing, in 1852, he became the proprietor of the *Horticulturist*, and continued its publication under the able and successful editorship of our good friend, Patrick Barry, at Rochester. Mr. Vick was also at one time associated with the editorial department of the *Rural New Yorker*, but he was most widely known by his extensive seed trade, and by his *Illustrated Monthly*, circulating as it has through our broad land. No similar publication has become more popular, or has exerted a more powerful influence in creating and extending a love of flowers and plants, and no death in his line of business has been more generally or deeply deplored.

WILLIAM SCHLEY, for many years a Vice-President of this Society for the State of Georgia, died at Saratoga, N. Y., August 14, 1882. He was a native of Georgia, and adopted the profession of lawyer, in which he gained an eminence that gave him a seat on the bench. He always took a lively interest in fruit culture. He was early sent as a delegate to the American Pomological Society, and from that time was generally present at all of its meetings, except during the war, ever manifesting a deep interest in its work. He was a gentleman much beloved by us, and specially noted and admired for his eminently social qualities, his winning grace of manner, his fine humor, sprightly, sparkling wit, and ever cheerful demeanor. He could have won political honors, and worn them gracefully and with distinction, had he desired to do so. He was a man of noble generosity and kind deeds, often cramping himself, by aiding others, and when a friend alluded to this trait he replied, "while by helping others I am made poor in purse, I am rich in happiness."

ARTHUR BRYANT, senior, a Vice-President of our Society, died at his residence, Princeton, Illinois, last March. Mr. Bryant was an educated man, in the true sense of that term, trained under the tutorship of his brother, William Cullen Bryant, with whom for a time he was associated on the *New York Evening Post*. He was a thorough scholar, eminent for his knowledge of the Greek language and of Botany, and for his love of the beautiful in nature. He was especially interested in the conservation of our forests, and in the planting of new ones, and had for a long course of years been a leading nurseryman in the West. He had been President of the Illinois State Horticultural Society, and was the senoir member of our board of Vice-Presidents. He was also a frequent contributor to our public journals, and author of a book on "Forest Trees for Shelter, Adornment and Profit." His decease is widely deplored, and has been appropriately noticed by the public press. In his character we recognize the enterprise of one of the pioneers of American Horticulture, and the virtues of an enterprising, upright man.

EDWARD D. PEARCE, Vice-President for the State of Rhode Island, died at Providence during the present year. He was a man of clear intellect, sound practical sense and great force of character. He was fond of the science of agriculture, and in some departments of it was prominent, especially in the importation of blooded cattle. In the cultivation of both the smaller and larger fruits, he was for many years without a rival in his State. He contributed largely by official services and personal influence to the advancement of terracultural interests, and was often elected to offices of honor and trust in his State. Mr. Pearce possessed a genial nature, and was universally beloved and respected as a very useful man.

HENRY E. HOOKER, an old and valuable member, and for a time a member of the General Fruit Committee, died at Rochester, N. Y., April 12th, 1883, fifty-nine years of age. He was prominently engaged in the nursery business, and by his enterprise, sagacity, and integrity, became well and favorably known throughout our country. He was always much interested in horticultural pursuits, and contributed by his labors and his pen largely to their advancement. He was much interested in the formation of societies for this purpose, and was Vice-President of the Western New York Horticultural Society at the time of his death. He was the introducer, or disseminator, of several new and valuable fruits, among which may be named the Brighton Grape, now so universally appreciated for its excellence. He was everywhere respected for his sincerity, always acting according to his convictions of the right; modest and unassu-

ming in manners and gentle in disposition, he was beloved by all who knew him.

CHARLES ARNOLD died at his residence in Paris, Ontario, on the 15th day of April last, aged sixty-four years. Mr. Arnold was for many years a Vice-President, and Chairman of the Fruit Committee for Canada West, of our Society. He was an Englishman, and came to Canada fifty years ago and here remained until his death. From a very early period in his life he manifested a great taste for horticultural pursuits, and for nearly forty years had been actively engaged in following his natural tastes.

Although not in early life an educated man, he found time during his busy life to become familiarly acquainted with many of the best writings of our time, especially those which in any way related to his favorite pursuits. He was a careful observer and eminently a practical man, speaking of what he knew rather than of what he conjectured. He often wrote clear and vigorous articles on the subject of cultivation. He has been for many years constantly engaged in the cross-fertilization of cereals and vegetables, and other plants and fruits, with marked success. Of the latter he produced new varieties of the grape, strawberry and raspberry, which are now considered very valuable.

In vegetables, his American Wonder Pea is everywhere highly esteemed, and at the time of his death he was actively engaged in experiments to improve the pea, potato and wheat. He was a man of great enthusiasm, with good judgment, and his loss is greatly to be deplored by us.

JOSEPH E. JOHNSON, our Vice-President and Chairman of the Fruit Committee for Utah, died at Tempe, Arizona, December 17, 1882, aged sixty-two years. Mr. Johnson was a prominent leader in the Territory of Utah in various settlements, and did much to introduce fruits and flowers in the districts where he resided. He was a valuable member of our Society, being ever ready to advance its interests as far as was in his power. He originated many seedling fruits, such as peaches, apricots, grapes, etc., some of them being of promising local value, as may be seen by his reports to this Society. Mr. Johnson had recently removed from St. George, Utah, to Arizona, where he intended again to engage in gardening and the culture of the soil. He was a very enterprising and progressive man, and occupied many places of honor and trust among his people. He was the proprietor and editor of several newspapers and periodicals in his day, among which were the *Utah Pomologist and Gardener*, and by his botanical researches, discoveries and importations, he inspired a taste for the beautiful in nature wherever he went. In a word, he was a man of unceasing labor, constitutionally a pioneer, and died working in the pioneer life.

B. F. TRANSOU, for the last ten years a Vice-President of our Society, and at one time Chairman of our Fruit Committee for Tennessee, died at his residence, near Humboldt, May 27, aged sixty-three years. He was born in North Carolina. In 1861, he removed to Gibson County, where he made a home enriched with fruits and beautified with flowers. He was a pioneer in the nursery business, Chairman of the West Tennessee Fruit Growers' Association, a member of other associations, and exerted extended and progressive influence in pomology and rural adornment. Mr. Transou was a man universally beloved in church and society, of winning manners, and faithful in all the relations of life. On the eventful morning when he was smitten down, while laboring in his rosary, God called, and he was removed to that better land where the leaf shall never wither, the flower never fade.

And now, while I am thus writing, there comes the sad intelligence of the decease of our beloved friend and associate, Dr. JOHN A. WARDER, Vice-President of our Society for the State of Ohio, who died on the 14th of July, aged seventy-one years. No death has occurred in this Society since that of Andrew Jackson Downing, which is more deeply or widely lamented.

He was born within the limits of Philadelphia, but had from very early days a love for rural life. He accordingly moved to Ohio, and about thirty years ago purchased a farm at North Bend, a part of which was formerly President Harrison's. He was a student of nature, and especially devoted to scientific researches. He was a beloved physician in Cincinnati until his removal to his farm, but during this time he was closely interested in the organization and work of various scientific and educational associations.

He was a member of the Cincinnati Astronomical Society; Western Academy of Natural Science and Natural History; Ohio Wine Growers' Association; Ohio Medical College; many years President of the Ohio Pomological Society, now the Ohio State Horticultural Society; President of the American Forestry Association until its consolidation, last year, with the American Forestry Congress, and member of the American Association for the Advancement of Science. He was much interested in landscape gardening and the improvement of our cemeteries. He was widely known as an author, editor and contributor to various literary and medical publications, among which we specially remember his works on "American Pomology and American Forestry."

He was remarkably unselfish and generous, devoting his whole life for the good of others; was modest and unassuming, possessing fine social qualities, and his society was greatly enjoyed by all who knew him. He had been recently appointed by the Department of Agriculture as Forestry Agent, for investigating the forest resources of our country, but was not permitted to enter on the work, for the Master called him home.

Would that I could stop here, but while I am closing this address there comes the sad announcement of the death of our beloved young friend, HENRY B. ELLWANGER, son of our old and esteemed member, of Rochester, N. Y. He was only thirty-three years of age, and was a member of the time honored firm of Ellwanger and Barry, but was widely known for his popular work on "The Rose," and for his careful classification of this queen of flowers, and his enterprising experiments in its hybridization. In the latter line of his studies he

had already opened a new era in America, giving promise of equal or greater success with that attained by the most experienced masters of the old world. His book established his reputation both at home and abroad, and his late article on "Old and New Roses," in the *Century Magazine*, added still further to it.

Mr. Ellwanger had been a constant attendant at our sessions for many years, and is well remembered as reporting at our last meeting for his father, then in Europe, on "Foreign Fruits."

How mysterious this Providence! It is only six weeks, at this writing, since he was sitting by my side and expressing the great interest which he felt in the hybridization of the rose, and his hope that although we may not be able to paint the lily, we may yet "add perfume to the rose."

Mr. Ellwanger was of most amiable disposition and courteous manners, and a Christian gentleman, having recently been invested with Deacon's Orders in the Episcopal Church. His death is universally and deeply deplored.

These and other friends have gone before us to that better land where we trust they are now partaking of fruits from the tree of life that perish not with their use. Thus one after another of our associates are passing away, and ere long all the founders of our Society will have joined the countless millions of the departed; but others will rise up and carry forward the designs which have been formed for the promotion of our cause. But let us not murmur or repine at the providence of God. This is the order of nature,—this the lot of all sublunary life—

> Fruits have their time to ripen and fall,
> Leaves have their time to wither and dry,
> Man has his time to flourish and fade,
> All must be cut by Time's ruthless blade.
> But though the fruits of earth may all fail
> And none be left to tell the sad tale,
> Still there's a land of promise on high
> Where fruits never fail, men never die.

(To be concluded.)

EDITORIAL NOTES.

AMERICAN POMOLOGICAL SOCIETY AND THE PENNSYLVANIA HORTICULTURAL SOCIETY.—The combined meetings in Philadelphia were very successful. The absence of Col. Wilder was universally regretted, as was that of first Vice-President, Mr. Barry. Mr. Strong, from the list of State Vice-Presidents, did admirable service as temporary Chairman. Mr. Berckmans was elected finally as first Vice-President, much to his surprise, but to the great satisfaction of the body. It is not often that two birds are killed by one stone, though it is often attempted. On this occasion the Horticultural exhibition, and the numerous attractions of Philadelphia, had some influence.

At the opening of one morning session, though an hour had been spent over time in waiting for an audience, only one member was present when the call to order came. However they soon filled up, and for an hour or two each day there were more than a usual average number of members present. Still Pears, Apples and some other fruits usually discussed, had to go over, and several essays will have to remain till the proceedings appear. Professor Riley's essay on Insects was read, and deemed very profitable, by all the listeners. Much discussion prevailed regarding a check to outrageous names for fruit; and some new rules were adopted, in the hope that they might aid in the suppression of the nuisance. In the discussion of the fruit lists, varieties which were merely valuable to amateurs, or which required a little horticultural skill to bring to perfection, found little favor. The Catawissa Raspberry was wholly stricken out, and other Autumn bearers, with English Gooseberries only kept in by a bare vote, while another variety of fruit, which one speaker said was "immensely profitable but unfit to eat," had many supporters. It may be well for the Society to consider the propriety of getting up a separate amateur from the regular market list. Col. M. P. Wilder was re-elected President, W. J. Beal, Secretary; Grand Rapids the place of next meeting; and five Wilder medals distributed. There were other worthy exhibits, but the committee wisely decided that the greater the distribution, the less the honor.

The Horticultural Society made one of its best exhibits. There was less to make the lover of excellence in skilful culture blush than seen for many years, and many things were really well grown. The practice of not putting on the growers' names is still maintained, and we are not converted from our old-fashioned notions, that it is not a good thing. After the Judges had been around, many of the commercial men put their own cards on them, but we saw no names on any of the amateurs' collections, or those of the trade who were unable of themselves to be present. A very pleasant change was in the presence of flowering plants, which had come to be replaced, almost wholly, by leafy things.

The cut-flower ornaments were far superior to anything ever seen at an exhibition on this continent, so far as the neat care and tasteful execution of the work was concerned. How to ornament and decorate, was however still subservient to the old notion that the article itself had to be manufactured, as well as decorated. We should like to see the chair on which our friend used to sit, appropriately dressed with suggestive flowers—or even the Bible he read from, have some floral emblems about them, suggestive of his last presence. But a "Bible of flowers," or an "Empty chair," in the way they are given to us, has little meaning. Still, these things serve to remind us that there is an art in floral decoration, well worth encouraging.

Fruits showed great progress. At one time it was a complaint that there was a deficiency in white varieties of grapes. Now, if anything, there is an over abundance, and it becomes an impossibility for a fair minded judge to recommend any one over another. All we can say is that the number of good ones is so great, that few will go wrong in taking any one that has fair recommendations. It is getting to be so with many other classes of fruit. The introducer who wishes for great success, must not only show that his pet is first rate—he must prove that it is better than the numerous first rate kinds offered.

THE
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AND
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DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

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FLOWER GARDEN AND PLEASURE GROUND.

SEASONABLE HINTS.

From now until spring, in various parts of the country, planting will be in order, and the "best time to plant" will hardly be a question any more this season. In southern latitudes spring has nearly come, and in the far north the ground is so frozen, or snow-covered, that planting is out of the question. But gardening has progressed wonderfully since the first number of the GARDENER'S MONTHLY was issued, and the intelligent planter does not care anything about the season, except in so far as it may interfere with known laws of success. In no other respect has the season anything to do with planting. Now, the conditions of success are these: Firstly, we must remember that, like all things of life, a sickly tree will not bear the "battering about" which a healthy one will. The very same practice which will be enough for a vigorous tree, will not save one the vitality of which is impaired. Therefore, the first condition of success is, that the tree be healthy. As a general rule, a vigorous thrifty growth coincides with health. But this is not always so. A shoot of asparagus an inch thick, is certainly no healthier than the wiry one found growing wild by the sea shore. In trees, good color is of as much consequence as good growth, as indicative of health. However, all we can say here is that good health is important to the best success.

Then, in the second place, we have to consider why healthy trees die. This is wholly a question of the moisture supply. A tree cannot live without an abundance of moisture continually coursing through its structure. A tree has moisture escaping through its smooth bark all winter, and through both bark and leaves all summer; and the danger from a transplanted tree, is that moisture will dry out faster than the damaged roots can supply it—in other words, that the tree will dry up. The younger the twig, the more chance of its drying; the smaller the twig, the more chance of its drying—the less vital power in the twig, the greater the chance of its drying—the less root, in proportion to what there ought to be, the more chance of any part of the tree drying—the more of the small roots which in transplanting have the soil not firmly pressed around them, the more chance of the top drying—the more cold wind after autumn planting, or hot dry wind in summer, the more chance of drying; so we might go on indefinitely. It all comes to this, that any one with experience can look at a tree and, with the chance of drying before his eyes, tell exactly what to do to make it grow. To one who does not know this, the whole thing is and ever will be a mystery. It

is these who worry over the best season to plant. Give these a first-rate tree in every respect—good health, good season, or what not—still the tree may die; but you may give the last a tree with all the roots grubbed off, or all the branches half dry —a mere cutting in fact—and yet the thing grows for him. Indeed, many men will do better with a lot of mere unrooted cuttings, than others will with the best of roots, and all because they have learned that the art of planting merely consists in the simple fact that we protect from evaporation till new roots are formed!

Now we go into details, as most chapters on "work for the month" do. For instance, we might say it is now so well understood that we may have an immense addition to our list of hardy evergreens, if we will only shelter them, that we expect all those who love these varied winter favorites will take measures this season to plant shelter belts in exposed places, or else to set the common hardy trees like Norway and Hemlock Spruce, and Scotch, Austrian and White Pines thickly about, so that the rarer ones can be put between them. Almost all young trees are tenderer than they are when older. It is therefore no test of the hardiness of some rare thing, that a small plant is killed in the winter. Silver Firs almost always get killed back for a few years in this section, unless protected, but yet gain a little in strength. After they are ten years old they will endure our hardest weather. So Spanish Chestnuts, English Walnuts, and many others will die back considerably, until they get strength. Therefore, protect any valued young plant, if possible, no matter how hardy its reputation may be. We have said this before, and yet it is fully covered by the general practical advice given in the opening sentences.

Nice smooth lawns are great attractions. If not level and smooth, earth may be filled in the hollow places at this season, and raked smooth and level. If not over two or three inches deep, the grass beneath will come through and make a sod before next summer; but if deeper, a little grass seed may be sown.

In treating hedges of Osage, Honey Locust, or other deciduous plants, we like the plan of letting them grow as they will for two or three years, and then, when the stems are a couple of inches thick, saw to the ground. A mass of strong sprouts then pushes up, which can be pruned into shape the next summer. Where hedges are to be thus made, or older ones have been neglected, they can be cut down to the ground any time in the fall or winter season. It seems that in spite of all that has been said, Osage Orange and Honey Locust are the best plants for farm fences, or where any very strong fence is desired. Berberry, Silver Thorn, and Pyrus japonica are the next best—indeed, except that it takes rather longer to make a good fence, the last named would be as good as the two first in all except cheapness. An extensive travel, however, teaches us that even Osage and Honey Locust are seldom successful as a protective fence, without great care, knowledge, and considerable expense. But the combination of wire and Osage, or Honey Locust, is all that can be desired. It need not be expensive barbed-wire. Any light posts, with two or three strands of wire—the posts simply strong enough to hold the wire two or three years, till the hedge grows up—is all that is required. When the posts rot away the growing hedge keeps the wires in place. Any sort of hacking of the hedge once a year, so as to keep it in bounds, will then make a thoroughly hog proof, or thief-proof fence.

COMMUNICATIONS.

TROPÆOLUM CANARIENSIS.

BY CHARLES E. PARNELL.

I see by recent issues of the MONTHLY that considerable has been said of late relative to the merits of Tropæolum canariensis as a climbing plant, and as it is one that has been so often cultivated, with such varying success, I am induced to offer a few remarks relative to its successful cultivation; and would here say that, so far as my experience with the plant has extended, I find that it requires and must have a well enriched deep border, and a cool and moist situation, as well as one that is partially or fully sheltered from the mid-day sun. If these essential requisites are complied with, it is a plant easily cultivated, and one that will produce very satisfactory results, if a little care be given as to training the young shoots, and to give an abundant supply of water during seasons of drought. I find that when grown in situations fully exposed to the sun it does well enough up to July 1st, or until hot, dry weather sets in, and then the leaves commence to turn yellow and dry up, and the plant is then anything but attractive. The seed can be sown in a hot bed about the first of April, and the young plants transferred into three-inch pots and gradually hardened off and planted out when all danger of frost is over, which in this vicinity is about the tenth of May. Or the seed can be sown

in the open air where the plants are to bloom about the same time, but then the plants will not flower so early. I have not the least doubt that Mrs. M. D. W.'s success with this plant is owing to their being in a partially shaded situation. In England the climate is much moister, and considerably cooler than here.

Tropæolum canariensis, or, as it is popularly called, Canary Bird Flower, is a half hardy annual with light green peltate five-lobed leaves, and bright yellow flowers; attaining a height of from twelve to twenty feet—according to the soil and its situation—and is a native of New Grenada and Peru; from which latter country it was introduced in 1775.

NOTES ON YUCCAS.

BY P. J. BERCKMANS, AUGUSTA, GA.

I enclose a portion of a flowering branch of Hesperaloe yuccæfolia, which I have had to bloom every year since 1881. You may have seen it; if so it will not be new to you; but if you have not you should know it. The plant resembles the Yucca filamentosa, but with fewer and narrower leaves. The flower stalk is from five to six feet high, with seldom more than four or five short branches. It is, however, densely covered with flower buds. These grow slowly and do not expand until they are three weeks old, but as they are all colored alike in every stage of development, the effect of the plant is very striking. The plant remains in flower for fully three months, and this during our dryest weather. I consider it a valuable addition to our hardy ornamental plants. It increases slowly, however.

Yucca Treculiana bloomed here for the first time last March and April. It is the most showy of all the varieties I have tried, and the earliest to bloom. The flower stalk was four feet long, regularly branched, each branch bearing from twelve to eighteen large ivory white flowers; the latter numbered upwards of 500 upon one stalk, and remained in bloom nearly four weeks. Our native varieties, like Y. alœfolia, Y. gloriosa and Y. pendula, of the tree growing kinds, seldom begin to bloom before the end of June.

[The Yucca family is so remarkably well adapted to American gardening, and the results of their employment are so unique, that we are glad to get every item that will add to the general knowledge about them.—Ed. G. M.]

EDITORIAL NOTES.

MANETTI ROSE STOCKS.—The *Journal of Horticulture* says that Manetti Rose stocks, "rightly prepared," do not produce suckers in England.

FINE TUBEROSES.—American grown plants of Tuberoses have such large roots that they have had great popularity in Europe. It is now said that those of the French growers in Algiers are superior to the American—about double the size, some say. The stems grow five to six feet high, and bear about twenty-five flowers to a spike.

A JAPAN QUINCE.—Pyrus Japonica—picked on the ground of the writer was three inches long, eight and three-quarter inches in circumference, and weighed nearly seven ounces. It is not often that they are found with such dimensions as this. The fruit has a grateful fragrance, but in view of the ordinary garden quince, has only an ornamental value. The plant makes a good and beautiful live fence.

CLEMATIS DISEASE.—Clematises often suffer to such an extent, from granulated roots, that it is next to impossible to keep them living long. The appearance is exactly similar to that produced on the grape by the Phylloxera, but it is the gall of a differerent insect, though the injurious results are the same. Besides this a borer attacks some species, working near the ground, as in the apple or quince. Then there is a sudden taking off by a fungus which works near the ground, girdling the plant, and causing death in a day or two—the whole plant going off as if struck by lightning. It is a pity that so many beautiful plants have such powerful enemies.

TRAINING GERANIUMS.—In San Francisco, where Geraniums live out all winter, they make beautiful specimens of great size, which surprise those who have seen only specimens under Eastern greenhouse culture. In some places they train them. We know of one which was trained to a flat trellis about twelve feet long and four feet high, and was a dense mass of flowers. The ivy geranium is much used for trellis work in San Francisco, and is very beautiful indeed.

THE MIST TREE.—It is not generally known that the Mist tree, Rhus Cotinus, is to a great extent, a dicœcious plant, and that it is the female only which has the beard, for which chiefly the plant is valued. Of late years it has been custom-

ary to raise plants from seeds, as they can be propagated more cheaply than by layers. But many of such plants are male and have but little or no beard. This paragraph is suggested by the sight of a very beautiful specimen near Horticultural Hall, in Fairmount Park. The whole of the very large plant was a mass of mist, of a pretty purple tint. Such plants should be selected for propagation by layers.

GROUNDS OF THE AGRICULTURAL DEPARTMENT AT WASHINGTON.—Mr. W. F. Massey contributes an interesting sketch of these grounds, under the charge of Mr. Wm. Saunders, to the *American Farmer*, from which we learn that the glass structures were in their usual clean and thrifty state. He noticed that the floor of the grapery, now that the grapes are coloring, "is kept mulched with tobacco stems, as a check to the thrips, a first rate idea, which I propose to adopt. In course of construction we noticed an enormous rose house, the dimensions of which I do not remember, but which I suppose is not less than 150 to 200 feet. The roses are to be planted in beds, with air chambers beneath, heated by steam pipes. The whole building is to be heated by a steam boiler, and will be of great interest to horticulturists in deciding the vexed question of the relative merits of steam and hot water for heating greenhouses. The admirably planted Arboretum at the Agricultural Department is rapidly becoming an object of interest as the trees develop."

A LARGE AMERICAN ARBOR VITÆ.—On the grounds of Mr. Rex Hinkle, at Mount Airy, Philadelphia, is a tree of Arbor Vitæ which has a trunk eight feet in circumference, and which rises nine feet to the first branch.

NEW OR RARE PLANTS.

ACER SCHWEIDLERI—THE BROAD-LEAVED NORWAY MAPLE.—Prof. Budd says the original tree is still growing near Proskau, in Northern Silesia.

THE CREEPING HYDRANGEA.—This proves to be a very desirable addition of creeping plants—the number of which that will adhere to walls by creeping rootlets is not large. We have but the English ivy, Ampelopsis, Trumpet vine, and Creeping Burning Bush for the whole list—unless we may include the poison vine, which seems harmless to many persons when growing in the full sun; and is particularly beautiful in the fall season of the year. The writer has the trunks of trees along an avenue covered by them, and though scores of people brush by them daily, he has never known one case of injury in twelve years since they have been there.

ACER VOLXEMI.—If there were only enough of it what a grand tree for avenue planting or for town streets would be this maple. It is of robust habit and rapid growth. The foliage is like that of the Plane, but larger and more umbrageous, and moreover it is hardier. The leaves are somewhat silvery on the under surface. Our experience of it is, in truth, very limited; but its hardihood, rapid growth, and stately appearance induce us very strongly to recommend it for trial in all cases for which the Plane is now used. The tree was introduced by M. Van Volxem, and described and figured in our columns in 1877, vol. vii., p. 73, and later on by Mr. Nicholson.—*Gardeners' Chronicle.*

JAPANESE OR POLYANTHA ROSES—deserve special notice; the latter are charming for small beds or edgings, and may be had in the following four varieties, of which we prefer the pure white form, Paquerette, which is almost a continuous bloomer. The others are Anna Maria de Montravel, white, very fragrant and double, blooming in miniature clusters; Mdme. C. Brenner, a blush-colored form of the above; Mignonette, rosy pink, one of the finest of these miniature or fairy roses. —*Garden.*

GLADIOLUS, STUART WORTLEY.—This was regarded as the best gladiolus at the September meeting of the New York Horticultural Society, to which the certificate of merit was awarded—a noble spike of grand, bold flowers, brilliant cherry with pure white throat and white band in center of petals. It would seem as if perfection in hybridizing the gladiolus had been reached.

SCRAPS AND QUERIES.

DAHLIA QUERIES.—William F. Bassett, Hammonton, N. J., says: "If any of the readers of the MONTHLY have Dahlias Little Prince or Frank Smith, I would like to be informed of it. Little Prince is described as 'currant red, tipped white,' and some of the flowers are so, but a large portion of them are variously spotted, and mixed with a much darker shade. Frank Smith is a very dark

maroon, tipped white. I would also like to get hold of a first-class scarlet Dahlia. Almost every florist offers scarlets, but some are coarse, some have open centers, and some are not scarlet."

QUERIES ABOUT TREE MANAGEMENT.—"S. N.," New Jersey, wants to know; "What time is best for trimming large limbs from white pines and fir trees to avoid bleeding them and injuring them?

"Can pines and first thirty feet high be foreshortened without damage, and so be made to grow thicker, if they have never before been trimmed?

"When is the best time to trim deciduous trees with the least damage?

"How do you raise from the seed oak and hickory trees on the spot where they are to remain?"

[No serious damage will be received by pines trimmed at any time, though it may be best to trim them towards spring. Good tree managers regard "as soon as cold winds are over" as the best time for pruning all kinds of evergreens.

Pruning of deciduous trees is usually done between the fall of the leaves and the pushing of new growth in spring. Large wounds should be painted over. Some like to prune large branches towards midsummer, for the reason that the tree has had the advantage of the leaves to be cut away, and has a large amount of growth material stored away in the branches, and, as a consequence, a very rapid growth of new wood is made, which will half cover in a single season, with a layer of new wood, and make painting unnecessary.

A large pine tree can be headed back as low as there are any green limbs, and the side branches may be shortened, making a very beautiful bush; but it would not, probably, make another leader. In pruning back young white pines in nurseries, a side branch is tied up, and this becomes a leader.

To raise oak and hickories on the spot where they are to remain, it is best to sow three or more nuts, two to four inches deep, according to the nature of the soil—the lighter the soil, the deeper the seed—and if they all grow, pull out all but one. The seed may be sown any time after it is ripe. The spring is as good as any, provided seed has not been kept too dry. If comparatively dry, the seeds of many trees lie in the ground a year before sprouting.—Ed. G. M.]

DAUBENTONIA TRIPETIANA.—Mr. Berckmans says: "By this mail I send you a branch and flowers of Daubentonia Tripetiana, a hardy shrub which blooms here as early as June, from seed sown in March; and continues to give a profusion of flowers until October. It is not new with me, but might be with you. At all events it is a valuable shrub for the Cotton States. I also send twig and flowers of Chilopsis linearis, a hardy shrub from Southern Texas; which is here also a valuable plant."

[This was a very beautiful flower. The tree belongs to the Leguminose family, and might be popularly described as a yellow locust with crimson flowers. We suppose the name given is of nursery origin, for the species appears to be Daubentonia punicea. The chilopsis goes by the name of flowering willow in Utah, from the willow-like leaves and habit of the plant. Notwithstanding its very different appearance from the Catalpa, it is closely related to it. It may be Called a blue Catalpa.—Ed. G. M.]

IMPROVING THE COLEUS.—With a box of leaves of striking and very varied beauty, Mr. Berkmans writes: "I have within the past three years worked upon improving a few strains of Coleus, and select a few leaves from this year's seedlings. I believe some are quite good; at any rate, I have nothing in the new or old kinds that are as desirable for our hot climate."

IMPROVING LAWNS.—"W. H. W.," Malden, Mass., writes: "Can you tell me how to eradicate from my lawn the coarse grasses? Last spring I had the lawn dug up, and eighteen inches of good soil put on it. It was then plentifully sown with choice lawn grass seed; but the soil seems to have been full of coarse grass seed, which has sprung up most vigorously, and ruined the lawn. How can I get rid of it, and get a good, velvety lawn? If you can tell me I shall be very much obliged."

[Very often much trouble can be avoided by weeding a newly-sown lawn: taking out all but that which is desirable before it goes to seed. After that nothing but the selection of those grasses which are best suited to the soil will do. These in time will crowd out all others. In Pennsylvania very few grasses can hold their own against "blue grass"—Poa pratensis—in an average soil. If the soil be damp, however, some of the Bent grasses —agrostis—are best; or over dry, the Fesqua grasses—Festuca. Crowding out, however, is a slow process. Those who desire the very best success with grass lawns, and who have the time or money to spare to have just what they want, must depend on hand weeding the first year for the best success.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

SEASONABLE HINTS.

There has been a great deal said about steam heating in our columns of late. It might seem, on the first thought, that this was only of interest to commercial florists who desire to erect houses on a large scale. But it was our conviction that indirectly the matter was of interest to all who loved winter flowers; whether in rooms or small greenhouses. Many large dwellings are now heated by steam, and where this is the case, a branch to the small conservatory or plant window solves the whole difficulty about heating these cosy little places. Besides, many people now prefer to buy cut flowers rather than grow them themselves, and hence if the perfection of steam heating will reduce the cost of raising flowers it becomes a question of interest to everybody.

There will still be many who want windows and small plant houses heated for plants, who have no chance to do it by steam. These will yet have to depend on the ordinary cellar heaters; or, if these cannot be had, wood stoves or other contrivances. As a rule, coal oil stoves are the best. Shutters, outside or inside, which keep in the heat, are often as valuable as inside methods of supplying heat which is lost.

Again, it is wise to attempt to grow in these places only such plants as require little heat. The old camellia and azalea are still among the best for small greenhouses.

Greenhouses attached to dwellings were formerly called conservatories. They were used simply to keep plants in bloom, not to grow them. After blooming they were sent back to the greenhouse, or to the florist where they came from. But of late years small greenhouses attached to dwellings are called conservatories, whether the plants are grown as well as flowered or not.

Pot culture, whether in rooms or greenhouses, depends, in a great measure, for its success, on how to water properly. Everything is simple after that. Now, the oftener plants want water, the healthier they will be; but to give them water when they do not need it is "awfully" bad practice. The "drainage"—that is to say, the material over the hole at the bottom of the pot—is in order to help carry water rapidly away. It seldom hurts a plant to give it a great deal of water, provided it runs rapidly through the pot, and away through the hole at the bottom. Therefore if you give a plant water in some quantity and it does not run through rapidly, be assured there is something wrong with the drainage. We must always watch very carefully when the plant is dry, before watering it. But the best plan is to turn the pot up-side-down, and knock the edge against a post, letting the ball fall into the left hand, examine the bottom of the ball and take away whatever may obstruct the water's passage, and then return to the same pot. We should like to repeat, so that it may be always present in the mind of the novice in pot culture, that it is almost impossible to give a plant too much water, when the water passes away rapidly through the soil and through the hole in the bottom of the pot. Of course our philosophical readers, who have followed the articles in the GARDENERS' MONTHLY, especially its Natural History Department, know the reason for this; but in this column the idea is to give only practical directions, and to leave reasons alone.

COMMUNICATIONS.

SOME GOOD POT PLANTS.

BY JAMES LESLIE, ST. JOHNSBURY, VT.

Rhododendron Fosterianum is one of the most magnificent of the genus I have seen. The flower measures about six inches across, beautiful clear white, with a dash of yellow on the upper petal, and very fragrant. There are others of the same type, very fine; in fact, all in this section are well worth cultivating.

Lælia harpophylla is one of the most charming orchids, on account of its color—described in the London catalogues as orange scarlet—lasts long in beauty, and, as far as my experience goes, is easy to cultivate.

Freesia refracta alba, a bulb lately introduced, is a nice thing; easy to cultivate, free flowering, with a delicious odor. This bulb when it is better known cannot fail to become a great favorite. It grows nicely in pure, turfy soil, with

enough sand to make it porous. Cover bulbs slightly, place on a shelf near the glass, water sparingly until the plants are some inches high. With such simple treatment the plants grew well, and flowered beyond all expectations.

Glonera jasminiflora is a stove plant of remarkable beauty, forming a neat shrubby bush, covered with Bouvardia-like flowers of the purest white. This is a decided acquisition to our stove plants, and should be in every collection.

PORTLANDIA GRANDIFLORA.

BY RODERICK CAMPBELL, UTICA, N. Y.

Named in honor of the late Duchess of Portland, who was a great patron of gardening. This is a noble stove plant, with large, deep green foliage, and fine, pure white flowers, agreeably perfumed. They appear in pairs at the end of each shoot, and measure from four to five inches long, and from three to four inches across the mouth of the cup. The leaves are oval shaped, six inches long when fully grown, and of a most beautiful light green. With tolerable management the plant forms a good, handsome bush or plant. Though introduced as far back as 1795, it is yet very rare, especially in this country. This is a matter of surprise to me, considering that it is so beautiful, and not difficult to grow or propagate. I can only account for its comparative rarity by supposing that most of our gardeners who have grown stove plants are ignorant almost of its existence, and quite so of its beauty and easy culture.

It is to make such fine plants as the Portlandia known that I write. There are many plants occupying spaces in our stoves and greenhouses that might be filled with better and handsomer varieties.

The best way to increase the Portlandia is by cuttings of the young shoots. These insert in the propagating bench, water the bed thoroughly, and keep close. I have succeeded well by putting cuttings in a six-inch pot, and placing them in hot bed, or cucumber frame at most.

Early spring is the best time to root the Portlandia. As soon as they have made roots they should be potted in two and one-half inch pots, and placed under hand glass close for four or five weeks, till they are fairly established. Shading must be attended to at all times, for the least sun will put an end to all your work in a short time. By this method I have rooted most kinds of shrubby stove plants with ease.

It is of the greatest importance to know the right kind of soil or compost a plant thrives best in. Numbers of stove plants do well in any light, rich soil. My present subject delights in a mixture of light, fibrous loam, sandy peat, and a very small quantity of vegetable mould.

The pots must be well drained to secure success.

HEATING GREENHOUSES.

BY B. O'NEIL,

CHAIRMAN OF COMMITTEE ON FLORICULTURE, ILLINOIS STATE HORTICULTURAL SOCIETY.

This is a subject of considerable interest to florists and greenhousemen. I have had a life experience with all kinds of heaters—from a forty-horse power, high pressure, steam boiler, down to a one dog power, common greenhouse flue, whose gassy emanations in cloudy weather would kill a toadstool at forty yards. For growing plants and flowers I would always give the preference to steam heating; but the great difficulty with high-pressure boilers is that they require constant attention, are not economical as to fuel and consume a great deal of water. This is overcome by the low pressure, self-regulating steam boilers.

I have an eight-section boiler, which heats about one thousand four hundred feet of one-and-a-fourth inch piping, purchased from and put up by, the Exeter Machine Works, of Exeter, N. H.

The boiler is below all the returns, so that all the water condensed in the pipes returns again into the sections. This water is heated when it comes back into the boiler, so that the process of steam making is not impeded, but goes steadily on. Forty-eight gallons of water fill my boiler and two gallons of water are wasted in a week. Each section is shaped somewhat like an oyster-can placed on its side, with holes on each end for two short pieces of pipe, which connect the sections with two oblong drums (upper and lower) outside the brickwork. On these drums are placed the paraphernalia of all steam boilers, with the addition of the weights and chains which adjust the drafts; and when the indicator reaches the point adjusted by the weights, it closes up all the drafts. The draft for fire can be adjusted by lengthening or shortening the chains to suit the weather. If such a thing as an accident should occur to any of the sections, it can be taken out and the drums plugged, and run without it until another section is procured. Another feature is that additional sections can be put on, without interfering with the original sections.

My boiler will run six hours without attention,

and the amount of hard coal burned (by computation) is about the same as that burned in common flues to heat the same amount of surface. This whole steam arrangement cost me a little over seven hundred dollars.

EDITORIAL NOTES.

DISEASE IN WINTER FLOWERING CARNATIONS.—These are very liable to the attack of a root fungus. The plants show the effects in a yellowish-green tint to the leaves for some time before final death. So far as we know, no certain remedy is known. Some Carnation growers lose large numbers of plants during the winter.

GOOD ORCHIDS IN SEPTEMBER.—At the September meeting of the New York Horticultural Society the committee reported that the Orchids were extremly meritorious for the season, especially the Odontoglossum vexillarium, 2 spikes, 16 flowers; Saccolabium guttatum Holfordi, 1 spike, and Lælia Dayanum, 2 flowers, in the 1st Prize lot; and Cypripedium Outramiana, a hybrid, evidently between Roezlii and Sedeni, 4 spikes, and Zygopetalon Granteri, 2 spikes, in 2d Prize lot. The Phalænopsis violaceum, shown as the new plant, is a gem of the first water—labellum and center of flowers richest violet rose, sepals margined white and tipped green, deliciously scented.

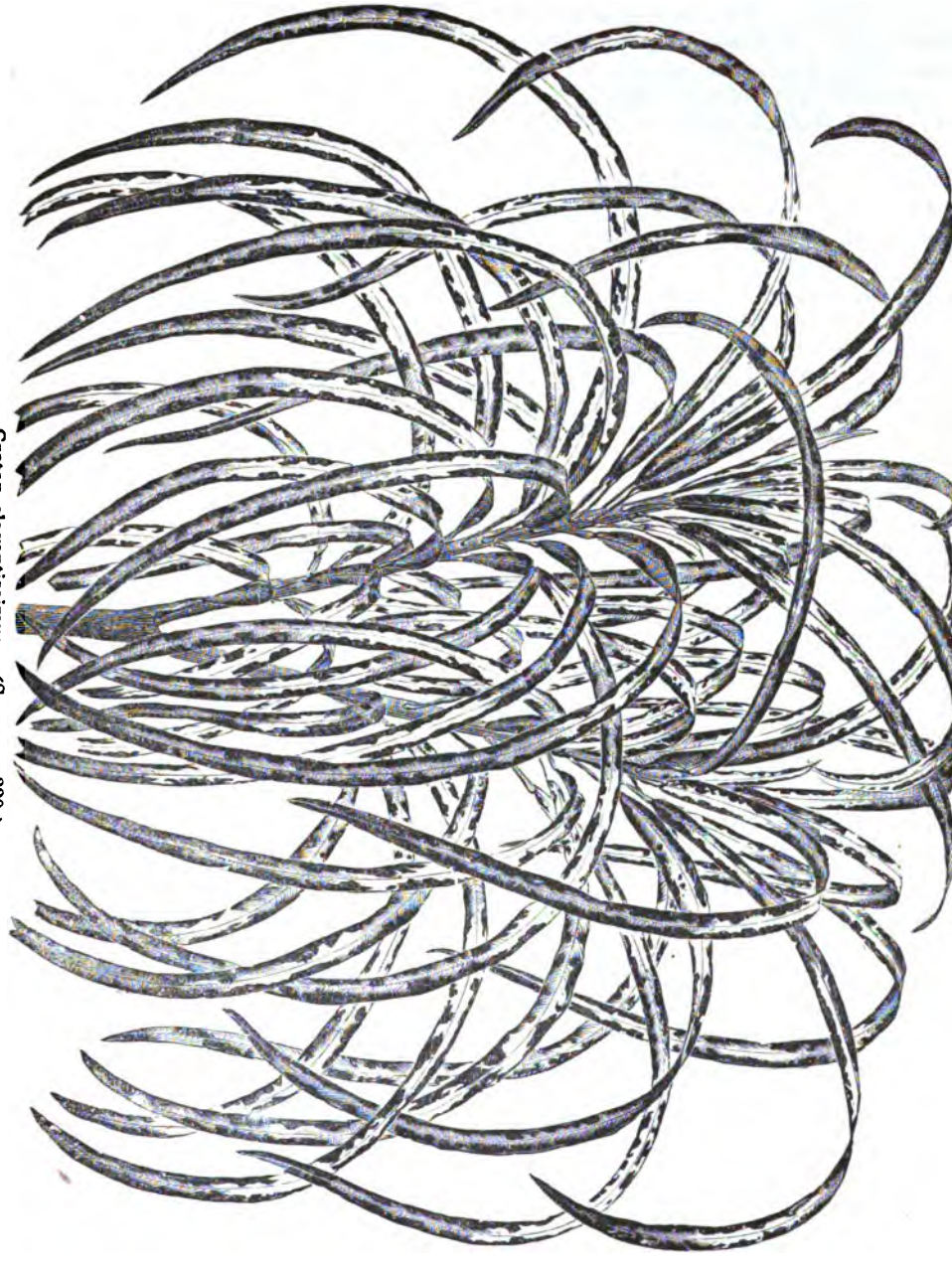
ORCHIDS OF EASY CULTURE.—Many hesitate to grow the beautiful tropical orchids, under the belief that they require expensive houses, and expensive skill to manage. This may be so of many kinds, but there are numbers which will do very well under simple treatment. The writer had a small plant of Catleya Mossæ some six or seven years ago, growing in moss in a galvanized-wire basket, which produced one spike of flowers in March, in a cool greenhouse—say about 55° or 60°. In May it is suspended in the open-air on a branch of a tree, and remains till the middle of September, when it is removed to its old place in the cool house. In a couple of years of this treatment it bore two flowers yearly, and the next spring three pseudo-bulbs will flower.

PANICUM PLICATUM.—For those who are not overstocked with small palms, and wish for a plant with handsome and graceful foliage, I would recommend Panicum plicatum. It is a grass of the easiest culture, the usefulness of which for decorative purposes can scarcely be over-estimated. A pinch of seed sown in August in a warm house and pricked off, five in a 6-inch pot, made what looked like single plants, 3 feet high and as much through, by December, and when used for decoration in the mansion was very much admired. Its leaves are about two feet long, and three inches broad in the widest part, beautifully plicated, or folded lengthwise, and bent sickle shape, so as to fall gracefully all around the pot. The folds in the leaves make it appear to have several shades, varying from a very light to a dark green color. It is, I think, best treated as an annual, and sown in successional batches. I intend growing it by hundreds. It seems to me not very particular about temperature, but a friend living in Co. Meath, who recommended it to me, says he tried it outside there during the last summer, and it was not satisfactory. It is, however, worth a trial in sheltered situations in the south of England.—*Wm. Taylor, in Gardener's Chronicle.*

PACKING CUT FOWERS.—During a year I receive some hundreds of boxes of flowers from all parts of Europe, and in seven cases out of ten these flowers are completely ruined by being packed in dry cotton wool. Of all packing material for delicate blossoms, it is the worst I know. The best is clean, fresh wood moss (Hypnum), and a little tissue paper may be wrapped around each flower, when large, or around the clusters or bunches when small. If moss be not at hand, then soft, green leaves are preferable to cotton wool, or the good flowers may be carefully ar-arranged among commoner ones without any other packing except a wet newspaper; better still, blotting paper at top and bottom of the box or basket. Nearly all flowers are better cut in the bud stage, just before opening. So cut, they pack more firmly, and travel more securely than when fully expanded, and thus give far more satisfaction on their arrival. The buds of daffodils, irises, water lilies, roses, gladioli, tulips, poppies, etc., never carry safely unless packed in some moist moss or fresh leaves, and in the bud stage.—*The Garden.*

HELIOTROPE ROI DES NOIRS.—This is, we think, the deepest colored variety we have yet seen. Its dense heads of bloom are of an intensely deep purple, and their perfume also seems to be intensified compared with that of paler kinds. It is a most desirable plant to have in the conservatory at this season if only for its perfume. It is now in great beauty in the Royal Exotic Nursery, Chelsea, where we saw it a few days since.—*The Garden.*

CATTLEYA MOSSÆ.—A friend, who has just



Croton elegantissimus. (See page 330.)

been making a little tour in Ireland, tells me of a remarkable specimen of this grand old orchid—a good variety, also, now bearing thirty-nine fully-expanded flowers, in one of the hothouses at Straffan. It is a veritable specimen, well grown, perfect in shape, every leaf perfect, and a great contrast to the "made-up" specimens we now and then see at exhibitions. In the same collection Disa grandiflora superba and D. Barrelli are growing like weeds in one corner of a house filled with herbaceous Calocelarias. The door stands open quite near to them night and day, but dryness is counteracted by copious syringings. In a few weeks' time they will be well worth seeing, the flower-spikes being both many and vigorous. Oncidium macranthum var. hastiferum is also

blooming in the Straffan collection, its flowers nearly four inches across. The purple lip in shape reminds one of a fox's head, and contrasts well with the broad, golden petals.—*The Garden.*

PRIZE ORCHIDS.—The following is a list of the Orchids in Mr. J. T. Peacock's group at the great Summer Show, Kensington, recently, for which a silver-gilt medal was awarded:—Brassia verrucosa, Burlingtonia venusta, Cattleya citrina, C. Mendelli, C. Mossiæ, Cypripedium niveum, C. lævigatum, Dendrobium chrysotoxum, D. Pierardii, D. suavissimum, D. tortile roseum, Epidendrum vitellinum majus, Lælia majalis purpurata, Lycaste Skinneri, L. aromatica, Masdevallia Harryana, M. Houtteana, Nanodes Medusæ, Odontoglossum Alexandræ, O. Andersonianum, O. Cervantesii, O. citrosmum, O. cordatum, O. cordatum superbum, O. Coradinei, O. gloriosum, O. hebraicum, O. Hallii, O. maculatum, O. nebulosum, O. Pescatorei, O. Phalænopsis, O. polyxanthum, O. Roezlii, O. Rossii, O. triumphans, O. tripudians, O. vexillarium; Oncidium ampliatum, O. Kramerii, O. Marshallianum, O. cucullatum, O. phymatochilum, and Phajus Wallichii.

We give this list to American readers because there is a growing feeling that many of these curious air plants will thrive very well in the open air of our American summers, and therefore a list of such as bloom in summer will be of value to those who may be disposed to experiment with them. There are no doubt some, perhaps many, which must be kept under glass all summer, on account of requiring a very moist atmosphere, but it is known from actual experience that many will do admirably hung out under trees.

NEW OR RARE PLANTS.

CROTON ELEGANTISSIMUS (see illustration on preceding page).—We had about concluded that the work of introducing new Crotons would soon be perfect; there are already so many good ones. But the exhibition of the Pennsylvania Horticultural Society, recently, showed them to so great an advantage, that it is evident their popularity is a long way from being on the wane. Unlike many other leaf plants, they are especially adapted for open-air culture in summer, and thus afford material for beautiful ornamentation during all the year.

Here is another very interesting kind, introduced by Mr. Bull. It is one of the most charming and elegant varieties yet offered. The leaves are narrow, and of considerable length. The variegation is of a rich bright golden color, frequently occupying the whole basal half of each leaf, but sometimes extending along the center, and occuring in distinct blotches. Hence the whole of the coloration near the growing point is pure chrome yellow, and this, contrasting strongly as it does with the bright red tint of the petioles, produces a very pretty effect. This variety was raised in Mr. B.'s establishment, and cannot fail to become a favorite for all decorative purposes. It was one of the New Plants with which Mr. W. B. gained the First Prize at the International Horticultural Exhibition, held at Brussels in 1876.

SCRAPS AND QUERIES.

NAMES OF PLANTS.—"F. W. & Co.," New Albany, Ind., write: "We send by mail to-day a package, containing sample leaves of the following plants, of which we should be much pleased to have your opinion, through the GARDENERS' MONTHLY:.

"First, a sample branch of a plant we obtained from New Mexico two years ago, which has proven very graceful, handsome and valuable, as a plant for either basket, vase, or border. It stands the hottest sun, and is particularly handsome, on account of its silvery appearance, which is not very often found in basket plants. While the slender stems droop over the sides of the vase, the crown is covered and hidden by the young shoots, which are continually springing from the root. Should be pleased to know its name.

"Second, we also send sample leaves of three Dwarf Lace Coleus. Do you not think the Dwarf habit a new and valuable advance in Coleus? These grow but ten inches high, and flower, while others in same soil and planted same time, grow two and two-and-a-half feet.

"Third, we send sample leaves of a variegated Hydrangea, (Otaksee) which reproduces its variegation in every bud cutting. Is this of any value?

"Fourth, we send sample leaves of a variegated Sweet Potato, that makes a very handsome basket or vase vine, and the variegation does not scorch in the hottest sun."

[1. This is a form of Artemisia Ludoviciana, one the wormwoods or "sage brush" of the plains. It would make a good basket plant. 2, 3, 4, wrapped in brown paper, were wrinkled and dried to an extent which precluded any opinion of their value. —Ed. G. M.]

Fruit and Vegetable Gardening.

SEASONABLE HINTS.

Among the numerous varieties of new fruits continually coming into market, it must puzzle the novice which to select. The raiser of novelties—as in the case of a grape introducer—whose card is before us, tells us that he had his new "seedling" alongside of the Concord, Salem, Hartford, and a dozen others, which all rotted and blighted, and "fizzled out" generally, while his glorious "Pride of Grapedom proved all that could be desirable in a first-class grape." We have a friend who is fond of growing numerous grapes. He has thirty kinds in full bearing and more coming on. His opinion is that "so far as doing well is concerned, I do not find that one does much better than another, except perhaps the Delaware and the Catawba. These do not always ripen very well. That is to say, some green or immature fruit will always be found among the mature ones. They all do well. My plan is to plant in dry ground; that is, ground in which the water will surely run away rapidly. I like hard, solid ground. By digging about the vines some roots get cut, and these get fungus and molds on the bruised parts, and this communicates to the whole mass. And deleterious insects get into soft ground much easier than when the ground is solid and firm. I keep weeds and grass from getting much headway by piling coal ashes under the plants, and I give the vines as much rich food as I can spare. They do not care how much you give them. This is all my secret." This is the experience of a successful amateur. He does not grow for market, but for pleasure. To some extent such a mode of culture could not be applied on a large scale. But it goes to show that when "every kind rots," and so forth, it is to the cultivator and the cultivation, and not the variety, that we may often place the blame.

There is, however, always pleasure in watching the progress of some new variety, and in testing the improvements supposed to be made; and while relying mainly on well-known and well-tested varieties for one's main crop, a judicious experimenting with new kinds will be found to be a source of great pleasure.

In looking at what is now considered as sound practice, and back on the advice we used to give when such advice was heresy, we often congratulate ourselves on the success of our teachings; though few seem to remember to whom they are indebted for what has been taught. Take, for instance, the shading of fruit in order to get them to perfection. When the GARDENERS' MONTHLY was first issued, the general belief was that it required "sun and air" to ripen fruits well, and the books teemed with directions to pull off leaves, thin out branches, and tie up shoots, and expose the fruit if we would have the best success. We showed that the initial stages of maturity was a vital, and not a purely chemical process; and that this was better secured by shade than by exposure. It was not good doctrine then, but now the general practice with those who want to get the very best bunches of grapes is to put paper bags on them; and some say that even tomatoes are far superior when treated in this way. But it is necessary that leaves should have the full light, though the fruit may not; and a few good, large, healthy leaves are preferable to a good number of small ones. By far too many branches are left on most trees. When the tree is in leaf, the one branch smothers out the other, and, remembering what we have already said about the value of healthy leaves, few leaves arrive at that perfection necessary to perfect the best fruit. Therefore, prune out enough of the weaker ones to give the rest every chance to develop their leaves to the fullest extent. Also prune so as to assist the plant to a conical form, as this enables the light to act better on all parts of the tree leaves. If trees have been neglected, in pruning now severely to get them to this shape, the result will be to make them throw out shoots still more vigorously from near the parts cut away. When these shoots appear in spring, pull them out while young with the finger and thumb. The current of sap will then flow strongly into the shoots left, and the ratio of growth will, in the end, be nearly equal through all the branches. The flow of sap through a tree is nearly like that of water through an uneven country. A very little obstruction will turn the

course; but that, once started, soon becomes as great a stream in the new as in the old channel.

Apple trees have a habit, when old, of pushing out sappy shoots along the main branches. These should be cut away, in addition to a similar thinning, as recommended for the pear.

Dwarf apples and dwarf pears should be examined now to see what the borer is doing for them. This is the time when they do the most destruction, as they are boring down into the stems for winter protection. A cut with a jack knife up and down the stems, so as to avoid girdling as much as possible, is the most certain destruction. Then, if in spring, before the parent insects begin to work, oiled paper, or rather tarred paper, be put about the stem near the ground they can be kept out. It is strange that with so little time as borer hunting takes, so many thousand trees should be allowed to die from their attacks every year.

Above all, for both apple and pear orchards, we bespeak a liberal dressing—a top dressing of something or another. If no manure is to be had, even common road sand will be found to have a beneficial influence.

Poverty of the surface soil is oftener a cause of fruit failure than "grass," "change of climate," or many imaginable ills, brought up from some ghostly cavern of thought, to cover up the poverty of pocket or of industrial inclinations.

Strawberries are much better when protected through the winter, no matter how "hardy" they may be. Very coarse, strawy manure is the best material, which can be raked off in early spring. A few inches is sufficient, just enough to keep the sun off when frozen, which all our readers know, by this time, is the chief cause of loss by frost.

COMMUNICATIONS.

DESTRUCTION OF INSECTS.

BY T. B., TRENTON, N. J.

I have noticed of late, in your invaluable journal, there has been a good deal said about the destruction of animals and insects most annoying to the garden and farm, and having been, the greater part of my life, engaged in battling with these vermin, I mean from time to time to give you some account of my experience in these matters. For, I think I know the great value and importance of the subject to the public generally. If I have made any discovery or improvement in these matters, it certainly shall not be hid.

I do not think it is generally known that, that much abused Ailanthus tree, both leaves and bark, is a very good insecticide, nor that the Thorn Apple, or Jamestown weed (Datura Stramonium) is much better. I have found the dust of Stramonium leaves fully equal to, or rather better, than any of the patent articles sold in the shops—but I do not apply it to cabbages. Let these leaves be collected and dried in time, and rubbed or ground into a powder, and kept dry until spring; and let every farmer make his own insect powder.

I tried at one time salt water, lime water, salaratus water and tobacco water, decoction of Ailanthus and ditto of Stramonium. I had my caterpillars, etc., arranged in groups along a board, wet them equally all over, and while most of the other things killed in five and six minutes, the Stramonium water killed in four minutes. This plant is widely diffused, and I believe within the reach of all. And this is another great advantage to the farmer, he has not far to go to look for his remedy—very often has it growing near his place. This will be found excellent for driving the slug from cherry and apple trees, but the tree must be wet and the dust blown on with a good large pair of bellows.

[Our correspondent has our best thanks for these very useful hints.—Ed. G. M.]

AN INQUIRY CONCERNING PEAR BLIGHT.

BY WM. CREED, ROCHESTER, N. Y.

I recently saw an April number, 1878, of the *Fruit Recorder*, in which there is a quotation from the GARDENERS' MONTHLY concerning the good as well as the destructive action of linseed oil upon pear trees, showing the opposite experience of two separate experimenters; and to which a note of the editor is appended stating that the trees, well spoken of in the MONTHLY, were at that time still models of health after two summers had elapsed.

From reading the above, at this late date, I am induced to ask if the said trees still hold out in health and thriftiness as then represented? My object in asking this is that I feel confident that to stop the ravages of pear blight, it must be by means of some outward application not yet matured or discovered, but will come in time, and counteract its bacterial origin, which is now generally admitted, and so far, has produced no champion able to refute this most recent theory of the disease.

With respect to the use of oil, if one party's ex-

perience indicates certain death and the other prospective health, by its application, pear growers are interested to know the why and wherefore of these diverging lines of experience. There is one thing in this oil question that is not particularly clear to me and that is, it is matter of guess-work whether it was boiled or raw linseed oil that was used in the cases cited. And this query may make quite a difference as to the intellectual working out of the success of the one, or the discouragement of the other. I will state this much however, of my own experience with a fine thrifty tree detected quite early in the stages of blight, and to which I gave an application of linseed oil, that painters had been using on the premises, but did not pay any attention whether it was boiled or raw. The whole tree went to destruction, but could have been saved by the judicious use of the knife, but I preferred to let the experiment take its own course. Since this experience I have applied raw oil to a few plum and pear trees in healthy condition, and a year's observation indicates health and encouragement, as may be seen by lifting or peeling off the cellular tissue, the underpart looking green and healthy, while on the outer part there is no indication of any bad effects. As I understand it, boiled linseed oil, as distinguished from raw oil, is by the former containing either litharge or oxide of manganese as dryers, and, I should judge, two very doubtful ingredients for the benefit of either healthy or diseased vegetation.

[The trees referred to were on the grounds of the Editor of this magazine. They were white with scale—so white that some appeared white-washed. The various remedies recommended were tried and failed. The Editor, traveling in the South, came across very healthy trees which had been washed with linseed oil. On his return home his pear and apple trees were all painted with raw linseed oil. Every insect was destroyed, and they have not been a trouble since. The trees to-day, are models of health. So many people, however, have killed their trees by using something they call "linseed oil," that the Editor says no more about it, than to relate his own experience when it is asked for. If he had trees suffering from scale he would not hesitate a moment about using linseed oil; others must use their own judgment.

Our correspondent is entirely in error in his belief that "no champion has been able to refute the bacterial origin of pear blight." Prof. Penhallow has recently given an elaborate scientific paper, in which he contends that it is the lack of mineral elements in the soil which causes peach "yellows," a disease joined with fire-blight, as referable to bacteria. This surely is an issue. To our mind, it is not creditable to what should be called "science," that two such directly opposite views are given to the world under its name.—Ed. G. M.]

EDITORIAL NOTES.

THE CURCULIO ON THE PACIFIC COAST.—The Editor looked closely but could see no signs of the curculio anywhere on the other side of the Rocky Mountains. They seem to be marching westward, however. On some wild plum bushes along the streams near Mandan, Dakota, all the fruit had been attacked by the insect.

A GREAT PEAR EXHIBIT.—Edwin Satterthwaite, who always makes a fine exhibit, exceeded himself at the last meeting of the American Pomological Society. He had 200 varieties, with not one mean or scurvy dish among the whole. In our opinion, it was the finest exhibit ever made in this country, if not in the whole world.

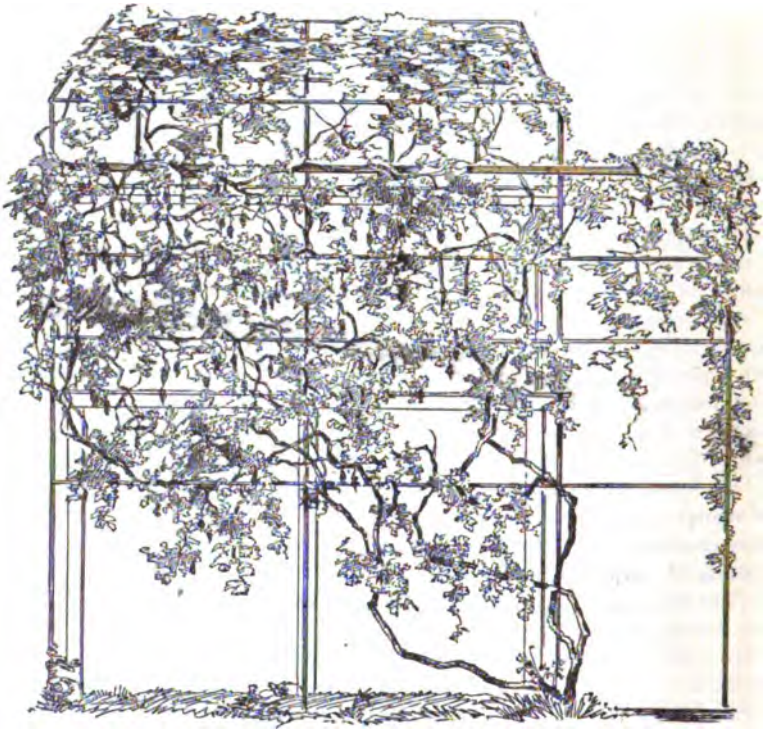
THE BEST STRAWBERRIES.—The Editor of the *Country Gentleman* sent to a number of leading strawberry growers for the names of the three best strawberries. Not one of them sent the same three names. Correspondents of the same paper send poor accounts of many lately-praised new kinds. The old Charles Downing seems to have a large number of friends yet; and the Cumberland Triumph holds its own.

GOOD STRAWBERRIES.—The strawberry correspondents of the various agricultural papers are out in full force with their observations during the past season. As a general rule, the favorites of the past two or three seasons have proved good for nothing; but it is gratifying to know that in almost every case the writer has some new kind in his eye, which will give us all that we lose in such once-favored berries as Sharpless, Bidwell, Crescent, and so on. Of the new names suggested we should judge there are about fifty which "are likely to prove all that can be desired in a popular strawberry."

CINCHONA.—We have seen it stated that the government ought to take it in hand to encourage the cultivation of cinchona bark for quinine in our country, "because they have been successfully grown in California." At the time this statement was made, the writer of this expressed his doubts of its accuracy, simply because no other Brazilian

plant had been found to do well in California. He has since seen the cinchona plants in Berkely County, California, to which allusion was made, and can say from actual observation, that they are not a success by a long way. They were simply eking out a miserable existence.

GRAPE VINES IN CITY YARDS.—We give with this an illustration of a city yard grape vine, as grown by Mr. Lorin Blodget. We append the note of a friend who paid a recent visit to the vine: "My visit to Mr. Blodget's remarkable grape vine, in his company, was a very pleasant one of some two hours. I performed feats of climbing from the ground on ladders, dropping from back windows of fourth story to back roofs of third story, thence to lower depths on other ladders, holding the while one end of a 100-foot tape line; Mr. B. holding the other. We recorded observations at altitudes and inclinations from the center of gravity that caused some trepidation to my unaccustomed head, but which seemed quite an every-day affair to Mr. B. and his little son, who climb like cat and kitten. I called out the measurements of the tape, and they are entirely within the memoranda Mr. Blodget records of that occasion. The vine did not suffer in the least in vigor—at its extreme ends—from its long journey to all points of the compass; but was strong-growing, equally matured in every part, and made—almost to an inch—an equal growth in each direction the same season. The abundant fruit, from whatever part of the vine taken, bore the same testimony of uniform vigor. Sight, smell and taste—the genii of that occasion—have left with me a picture of strong individuality. The artist had orders to draw the house and vine in perspective, but he has only given a flat view of the end of arbor from the east. He has failed entirely to show the north view of the vine climbing to the roof, with an east and west extension of nearly 100 feet, and left out the house altogether. There was no time to make a new cut. So the reader must derive his impression from Mr. Blodget's account in October number, page 304.



KIEFER PEAR.—At the recent exhibit in Philadelphia, two, three and four year old trees were exhibited, on which had grown nearly a half bushel of fruit. We do not admire such examples of good culture. Nine out of every ten pears should have been taken off in infancy. Then the fruit would have been delicious. These will be no better than turnips; and this is why the Kiefer is pronounced to be a kind not fit to eat.

THE BEST FOOD FOR DYSPEPTICS.—In the recently-published memoirs of General Dix, is an account of his visit to Dr. Abernethy for advice on dyspepsia. The queer old doctor said to him: "Sir, you are pretty far gone, and the wonder is you are not gone entirely. If you had consulted common sense, instead of the medical faculty, you could probably have been well years ago. I can say nothing to you excepting this: You must take regular exercise, as much as you can bear without fatigue, as little medicine as possible, of the simplest kind, and this only when absolutely

necessary, and a moderate quantity of plain food, of the quality which you find by experience best to agree with you. No man, not even a physician, can prescribe diet for another. A stomach is a stomach, and it is impossible for any one to reason with safety from his own to that of any other person. There are a few general rules which any man of common sense may learn in a week—such as this: That rich food, high seasoning, etc., are injurious. I can say no more to you, sir; you must go and cure yourself."

IMPROVED HORSE-SHOES.—Good hard roads are desirable to every pedestrian except horses. The softer it is, the better for the "pedes" of horses, unless it is too soft to bear the horse's weight. How to get good, hard roads, and yet have an elastic shoe, has long been the puzzle. All improvements so far have been in the direction of a grooved shoe, with some elastic material forced into the groove. But in all these cases the shoe wears out soon, and the owners seem to prefer to risk the wearing out of the horse than the certain wear of the shoe. Now we are told that an English mechanic has invented a horse-shoe composed of three thicknesses of cow-hide, compressed into a steel mould, and subjected to a chemical preparation. It will last longer than the common shoe, weighs only one-fourth as much, does not split the hoofs, requires no calks, and is very elastic.

Let this English mechanic come to America if he wishes to make a fortune for himself instead of his grandchildren only.

SCRAPS AND QUERIES.

FRANCIS B. HAYES GRAPE.—We have some bunches from the originator. It is a medium-sized, very compact bunch. It would be like the Telegraph if black. But it is a white grape—or, rather, an amber color. The flavor is sweet, but, like the Catawba, it leaves an astringency in the mouth if its sweetness is "long drawn out." It strikes us as having a fair field before it for successful competition with the numerous white varieties now before the public.

THE BEST PLUMS TO PLANT.—A correspondent inquires for a list of plums which are found to do well in the vicinity of Philadelphia. They all do well. The writer has all the leading kinds, and no one seems to succeed any better than the other. For some years he had no fruit, through following the numerous schemes for saving labor, which really required more hard work. The last two or three years he has fallen back on the old method of shaking the trees, and has all the fruit he desires now.

ROOT DISEASE IN THE PEACH IN CALIFORNIA.—A California correspondent writes: "Although a stranger to you, I take the liberty to ask your assistance to determine the disease or malady affecting the peach roots, samples of which I send you. The nursery has been affected in a like manner for several years past; but the climax appears to have been reached with all the peach stocks grown last season, for now over one-half are either dead or dying. In many instances the bud refuses to start when the top is removed in the spring, but the tree soon dies instead. I have made only one or two observations in regard to it, and that is, that only peach roots are attacked by it, and that moisture of soil appears to be favorable to it. The smaller sample sent you has already been killed by it; the other sample, together with a section of the top, were taken from a tree in a fair way to die soon. I notice in the GARDENERS' MONTHLY, which I take, there is a considerable discussion about the 'yellows.' Has this any connection with the 'yellows'? Can you suggest any remedy for this disease? If so, please inform us."

[This disease is produced by one of the small fungi, known as carbon molds; and is so very small that even good microscopists have failed to make out its exact character.

The disease known as the "yellows" is different from this; though that also is brought about by a parasitic root fungus. There is no cure for "yellows," because it has done its work before the grower is conscious of it. The rule is, to get rid of the trees, and plant others.—Ed. G. M.]

PEACH TREES IN CITY YARDS.—For small city yards there are no more satisfactory fruits than peaches and grapes. We have occasionally noted the great success of Mr. Blodget, in a city yard in Philadelphia; especially in connection with seedling peaches. In a note from Mr. Blodget he says of these: "I have just picked half-a-bushel, the last of the matchless Percivals; and my people have put up since Friday last, 100 quart and two-quart glass jars of the two Golden Clings. My crop altogether is larger than last year; and while the quality is excellent, the sizes are less regular. I shall lose several trees—fortunately not yet the Percivals or Golden Clings, although

the last have broken very badly with the great crop."

VEGETABLES IN ENGLAND AND AMERICA.—"B." says: "I notice in GARDENERS' MONTHLY of August last, a brief review of the history of market gardening and seed growing, etc. in Philadelphia. I also saw in GARDENER'S MONTHLY, about a year ago, a long article giving details, etc. of the growing of seeds; and some, I think, misstatements.

I write now for information; would your contributor kindly tell us the name of the only good vegetables he calls blanched sprouts of perennial plants? I am under the impression England has good lettuce. The late James Vick once asked the question, after a visit to England, "Why cannot we have as good lettuce here as there?" Green peas, I fancy, are superior there; cauliflowers, broccoli, cabbage sprouts, brussels sprouts, are certainly superior, and are sent to market without being full of slugs. In this connection it might be well to refer to a letter of the Hon. J. D. Cameron, in the New York *Times*, Sep. 5th. After describing his visit to Hereford on a market-day, he was surprised to find a well-dressed and intelligent lot of people. He visits his gardener's mother, who of course is delighted to see him. All the people he saw appear to be contented and look as if they had plenty to eat. I am sure they have plenty to drink. This is the testimony of Mr. Cameron, of your State—State Senator. Of course Britons do not profess to grow tomatoes, or melons, as we do potatoes here, simply because the climate is against them. String beans and vegetable marrows, to which your correspondent refers, properly cooked, even in England I have found equal to any here.

[There is no need of controversy here, if we say that both our correspondents are right in some respects. Our first contributor is correct when he says that in no part of the world is there so great a variety of fine vegetables seen as in the markets of Philadelphia; but this is owing to its geographical position. The vegetables best suited to cool countries are here, with those brought from far South, and the intermediate location of the city is favorable to very diversified growths. Blanched perennials of course means sea kale, cardoons, asparagus, etc.

On the other hand, our present correspondent is correct in his point, that the original contributor has under-estimated the vegetable productions of Great Britain. Cool country vegetables do better in England's cool climate than they do in the warmer region of Philadelphia. It is only those vegetables which like a warmer climate, which excel in this part of the world.—Ed. G. M.]

SEEDLING FROM MARIE LOUISE PEAR.—Mr. D. W. Lathrop sends us a pear marked No. 1, raised from Marie Louise, which we cannot compliment more than by saying it has all the excellence of that variety when in its best condition. It is thicker in proportion to length, and with a richer, russetty color on one side than we have ever seen in its parent. In our climate Marie Louise ripens too fast, and a few days after gathering rots at the core. If this variety has more conservative qualities in this respect than its parent, we should judge Mr. Lathrop has a very good thing.

FORESTRY.

COMMUNICATIONS.

BEECH FORESTS.

BY R. D., WAUKEGAN, ILLS.

I never saw land apparently better adapted to the growth of beech and chestnut trees than the bluffs along the western shore of Lake Michigan, from the Wisconsin line to within ten or fifteen miles of Chicago. A sandy, gravelly loam for the most part, intermixed with spots more clayey, sixty feet above the lake, thoroughly drained naturally.

Forty years ago the more sandy knolls were covered with a growth of red oak, and the more clayey land with white oak trees. Where I reside, I had the timber cut off in 1845, built my residence, 1850, and commenced planting in 1851. Every

kind of tree I can now think of, hardy enough to endure this climate, have done well except the beech and chestnut. When I commenced my ornamental planting in 1851, I had already a number of trees that I had purchased from Benjamin Hodge, of Buffalo, and Custead & Elliott, of Cleveland, in 1848. As far as I recollect, they all grew very well except the chestnut. They had no beech trees. Wishing to have a specimen of every tree that would endure our climate, I sent a man up to the beech woods in Wisconsin, only twenty to thirty miles north, and standing on exactly such land, to all appearances, as this; hundreds of acres of fine beech forests extending from the edge of the bluffs back a mile or two, and although these woods have long been cut down, there are still thousands of beech trees in the pastures and on land that has not been cultivated. The twenty or thirty beech trees brought from Wisconsin were planted, one here and there, on my grounds, skirting the lawn, along the edge of the ravine, etc., and to-day three of them are standing. The best one, six inches in diameter and about eighteen feet high; the next four inches in diameter, and the next two and three-quarter inches. On the same soil, with the same care, I have grown a Norway spruce that measured, when cut down last year, thirty inches in diameter. It stood within one hundred feet of the largest beech. A larch tree standing near this beech, cut down after standing twenty years, had made an inch in diameter from the time it was planted. Even a sugar maple planted several years later now measures over eighteen inches in diameter. I have planted purple beeches and weeping beeches over and over again, but they would all die in two or three years.

Twenty years or more ago, before the beech woods were cut down, when the wild or passenger pigeons were migrating south, they would invariably fly along the edge of the bluff, and nearly every man who owned a gun would be standing on the bluff shooting them, just after they had filled their crops with beech nuts. Hundreds of them were wounded and left to be eaten by vermin, and the nuts left in the proper places and conditions to grow. Aside from this, scores of hawks were preying on the flocks; and before the white man came here Indians frequented this place in great numbers; yet in all the thousands of beech nuts that must have been scattered here, there has never been a beech tree found either on the bluffs or under the bluffs; but, what is somewhat remarkable, in the ravines that have cut their way through the bluffs, a very few beech trees may be found, not over twenty trees, in all the ravines between Chicago and the State line. Land-slides in these ravines show the different strata, and they are all very much alike, some of almost clear gravel, of clay, of sand and gravel mixed, etc. and as far as I have been able to examine these beech trees, have found but one strata on which they can grow—*i. e.*, a strata in which there is little or no limestone gravel. Now as to the chestnut, hundreds of trees have been planted in and around our city, mostly twenty to thirty years ago. I do not know if there is one left, but a few years ago I knew of two trees; they had dwindled along for over twenty years and were two or three inches through, while on a sandy loam ridge without gravel, about fifteen miles north and two miles from the bluff, there stood, a few years ago, a number of chestnut trees that were then growing very rapidly, and may be yet.

Now, as nearly all our gravel is limestone, I have long been of the opinion that beech and chestnut trees will not grow in limestone soils. I have never seen anything on this point in print; and although I have inquired of many men living in beech and chestnut districts, I have never been able to get any satisfactory information on this point. My theory got a terrible shaking last month when on the grounds of Mr. A. R. Whitney, of Franklin Grove, Ill. Mr. Whitney's land is, in the main, like the ordinary rich prairie lands of Illinois, strongly impregnated with lime; and there I saw a row of chestnut trees and a row of beech trees, of large size and thrifty growth. I remarked to him, that the sight of these trees had dissolved my twenty years' theory into thin air; but when I told him what my theory was, he showed me that this was not limestone land, but near where sandstone rock is cropping out, and where he has quarried out sandstone rock. What is the reason that the beech will not grow?

[We should be inclined to the opinion that the beech will yet grow, and that the failures arise from some imperfections in the specimens used. In regard to the indisposition of many forests to produce young trees, in the cases which have come under our notice, it has been from the absence of circumstances favoring the germination of the seeds. Circumstances favoring germination and circumstances favoring the growth and vigor of the tree, are often very different. In most forests, so far as the observation of the Editor goes, it is but occasionally that a good year for seed growth occurs.—Ed. G. M.]

EDITORIAL NOTES.

EUCALYPTUS AS A FEBRIFUGE.—The ease with which mere notions come to be regarded as true scientific deductions is the source of much trouble to those who desire to advance no further than solid facts warrant. The reputation the gum trees of Australia, species of Eucalyptus, have received as "Fever trees," is a good illustration of this. It has been shown in these columns that the immense growth of these trees necessarily involved a great draught on the moisture reservoirs of the earth, and that any rapid-growing tree would dry a swamp as well as the Eucalyptus. The benefits were as likely to come from the draining of the soil as from any peculiar virtue in the resinous exhalations from the tree. We have now some actual facts, contributed by J. E. Woods, of Queensland, a botanical writer of considerable reputation. He says the "Hodgkins diggings" is a region famous for fever and ague; yet species of Eucalyptus are not only abundant about the tract, but that prevailing winds blow through hundreds of miles of these trees before they reach the infected district.—*Independent.*

TREE PLANTING IN THE ISLE OF MAN.—By direction of Sir Henry Loch, Her Majesty's Commissioner of Woods and Forests, a large extent of Crown lands in the Isle of Man is about to be planted with forest and ornamental trees. About five hundred acres are now being so planted on the mountain called Archallagan, where cabins have been erected by the contractors for the accommodation of the men.

YELLOW PINE.—In this country it has come about that no one knows what he is reading about when "yellow pine" is referred to. A number of very different species are called yellow pine. White pine has, however, hitherto been spared the endless confusion which seems inseparable from the use of common names. White pine has been Pinus Strobus everywhere, except perhaps sometimes on the Pacific, where Pinus Lambertiana is known as white pine. Sugar pine is, however, so general for that species, that white pine will probably not become general. But now we have *Forestry* telling its reader that "yellow pine" is Pinus Strobus, which is so well known as white pine.

WILLOWS.—In the discussions on forest culture, little is said of the willow, which forms a very interesting department. The white willow, Salix candida, is often used for coarse work. S. Vinnunatis and S. Russelliana, are the most commonly used in the eastern United States, under the name of Osier, or basket willow, and S. Forbyana, a variety of S. rubra, or the red willow is often used for fine work. In the Editor's recent visit to the Northwest a number of fine species were noted which would evidently be worth introducing for basket making purposes.

SCRAPS AND QUERIES.

RUSSIAN MULBERRY.—We have inquiries about this coming in once in a while, though we have several times told all we know of it. It is a variety of the morus alba, the common white or silk-worm Mulberry, and good enough to grow for silk or timber, but we do not know that it has any special value over any other variety, which are numerous in this species.

FORESTRY IN CALIFORNIA.—We are indebted to a Santa Cruz correspondent for much valuable information in regard to forestry in California, of which we shall make good use as opportunity offers.

THE BLUE GUM IN FLORIDA.—"R. E. P.," Jacksonville, Florida, writes: "I notice in the MONTHLY for August you say, 'The Blue gum seems at home in Florida,' and add that one at Leesburg is 'twenty feet high, with trunks eighteen inches round, four years from the seed.' That may be so, but I know that the E. globulus winter-kills here. It has been tried here by quite a number of persons, and I do not know of any one living at present."

[It is just as well that it does not, for from the Editor's examinations in California it is a timber tree of very little value after it has grown. It is a rapid grower—capital where rapid screening is desired—but there are American trees of rapid growth, and of more value when grown.—Ed. G. M.]

CATALPA SPECIOSA IN ARKANSAS.—"L." says: "I find the Catalpa in this vicinity on Black River, and I have just procured a three-foot log of it for the American Museum of Natural History, New York. There are trees along Black River, in Clay county, Arkansas, fully four feet in diameter, but the growth after the first fifteen or twenty years is very slow. My three-foot specimen—*i. e.* three feet in diameter—is about 200 years old, by the rings. This holds with dozens of logs examined in the same neighborhood."

THE WHITE SPRUCE.—"W. D. K.," Abingdon, Va., writes: "I send you by mail to-day a box containing cones and branches of an evergreen I find growing on the top of White Top Mountain, 5700 feet above sea-level; also a balsam-nut, 300 or 400 feet higher. I send it to know what it is; it is known here by the name of Lashorn, rather Lash-horn. The whole southern and south-western face of the mountain has no timber, except here and there clumps of dwarfed birch and beech-grass growing. This evergreen Lash-horn grows upon the summit—some splendid trees growing out where not crowded. I cut the branches I send from some seedling I brought out nine to twelve inches high; the cones I gathered from an old tree. I think they are last year cones. I had supposed heretofore it was the American white spruce, but do not know."

[Our correspondent's determination is correct. It is the true white spruce—Abies alba. The Editor has found it as far south as Roan Mountain, in North Carolina, where it is in comparative abundance and makes a good timber tree. It does not do so well at low elevations.—Ed. G. M.]

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

PINUS KORAIENSIS Sieb. & Zucc.

BY JOSIAH HOOPES.

Through the kindness of Chief Engineer G. W. Melville, U. S. N., I have enjoyed an opportunity of studying some excellent specimens of this interesting species of pine, collected by him during the late voyage of the unfortunate "Jeannette" to the Arctic regions. These specimens consist of a branch clothed with foliage, two immature cones, and a few mature seeds, and were collected in the District of Tuknansk, in Eastern Siberia. It was seen along the banks of the Lena, Yenisei and Obi Rivers, forming a tree about thirty feet in height, with a trunk about ten inches in diameter at base. The collector further states that it fruits abundantly, and "the edible seeds are used by the natives as food, and by travelers as nuts." It is interesting to note that this heretofore comparatively rare species has a wider habitat, and is more numerous than has generally been supposed, although reported as having been found up to the Amoor River, which takes its rise in the mountain range dividing the Lena from the Amoor; hence it was reasonable to suppose it was more generally distributed throughout Siberia and adjacent islands. Siebold found it in Kamtschatka; and various authors have described it in the list of Japanese Coniferæ, but only in the latter as an introduced species, where it is said to be quite rare.

Pinus Koraiensis is placed by Dr. Engelmann in his recent revision of the genus Pinus, in the sub-section Cembræ, of his first section, Strobus. It is distinguishable from the section Eustrobi by reason of the parenchymateous ducts, and with leaves sparingly serrulate, scarcely denticulate at tip. This nut-bearing pine is well marked throughout, and especially so in its cones and seeds, the latter being wingless, subangulate, flatly compressed, leaving on both sides of the scale when removed, remarkably deep impressions. The cones are very distinctive, with long reflexed scales, terminating in an abrupt mucro-like apex. The leaf-characters in the specimens before me coincide with the published description given by Dr. Engelmann, in relation to the absence (or nearly so) of hypoderm or strengthening cells, as well as in other peculiar features of the Cembran group.

Murray, in his "Pines and Firs of Japan," records its height from ten to twelve feet, yet Parlatore, on the authority of Perfetti, gives it at "sometimes thirty to thirty-three feet." The latter is corroborated by Chief Engineer Melville, thus showing conclusively that it is a true northern species, attaining only its greatest size near the extreme limits of arboreal vegetation; and yet, like all other species of nut-pines, it never forms a large-sized tree.

This species will no doubt make a valuable addition to our list of ornamental Conifers, as its hardiness is unquestioned, and the foliage is as attractive as any other of the white pine group,

unless we except the P. excelsa. In England it has proved reliable, and with us the small plants show evidences of success.

[This interesting contribution to botanical geography, was made to the Academy of Natural Sciences, of Philadelphia, recently.—Ed. G. M.]

EDITORIAL NOTES.

COMMON NAMES OF PLANTS.—The English magazines continue to discuss this subject, evidently misunderstanding the essential point of the question. For instance, in a recent issue of the *Garden* a correspondent triumphantly inquires if it would not be very absurd to say Pyrus dumplings, Vitis pudding, or Cerasus pie, instead of apple dumpling, plum pudding, or cherry pie? No one is urging such an absurdity. Everybody knows what is meant by apple, grape and cherry; these names are really common names. It is the coining of names and pushing them out as common when they are not common. For instance, in a recent issue of the proceedings of the London Biological Society, one M. Delauny communicates a paper on the instinct of animals in selecting medical plants, and talks of "the dog-tooth grass" as being a valuable emetic and purgative. We will venture a guess that even our good friends of the *Garden* do not know what the writer means, though they are right on the spot. Let us emphasize the point, that we have no objection to common names, but with the very uncommon ones.

HOGS AND HEALTH.—A curious lawsuit recently occurred in England. Some one wanted the hog-pens of the poor removed, and the usual certificates of the doctors were to hand that hog-pens were very unhealthy. Legal advice was obtained for the poor people, and statistics brought out to show that that particular spot was the healthiest in the whole place. To clinch the case, a carload of chubby children was dumped down in the court room to show that they were the pictures of health. But the hard-hearted court ordered the pig-pens abolished.

RAVENS IN ALASKA.—While collecting plants on Wrangel Island, the Editor was surprised at the tameness of the shore ravens of that part of the world. They would sit on stumps and enjoy their meals of stale fish entirely without concern. On one occasion, to test their tameness, he walked quietly towards one, and approached within five feet before the bird flew away. It was afterwards found that these birds are held sacred by the Alaska Indians. The children are taught never to kill one, and are punished when they do. They believe in a kind of purgatory, where the souls of the imperfect suffer the pain of hope deferred, in their endeavor to reach the nice, warm place which is the Alaskan Heaven. Many of these souls are detained in ravens. That is, a raven may have a detained spirit for its essential being, and hence, naturally, they receive Indian protection. Their voice is often marvelously like that of some scolding human beings; and more than once the writer has started "as if shot," when in these wild woods, by supposing some Indian was yelling at him from behind.

THE LINNÆA.—Possibly no plant could more worthily commemorate the great Botanist than this modest little flower. Up to the time of Linnæus it was supposed to be a campanula, but on his tour through Sweden, when still a young man, he saw the distinction, and his friend Gronovius, the Dutch botanist, named the plant, in his honor, Linnæa. In the writer's library is a picture of the young botanist, clothed in his traveling clothes, and with a branch of the Linnæa ready to put into his botanical box. As the fame of Linnæus is so universal, so seems the growth of this little plant. It not only is common in Northern Europe, but over the northern part of the American continent. It was among the first to catch the eye of the writer of this on his first entrance, recently, into the Douglas spruce woods of Washington Territory; and all through British Columbia, and high northward in Alaska, it was rare to make an excursion without walking over Linnæa borealis. It is not by any means a showy plant; but as emblematical of the universality of the modest genius of Linnæus, no better could have been taken.

THE EARTHWORM.—It would be interesting to know just where everything made its first appearance on the globe. We only know that all things play the role of travelers. The earthworm is no exception. It has not got to Manitoba yet; but it soon will be. It is not so many years since they were not in Minnesota; but they are very abundant about Minneapolis now, and possibly through most of that State.

FERNS OF THE UNITED STATES.—Mr. Geo. E. Davenport has recently issued a table showing the distribution of ferns in the United States. The number of species so far described is 155.

In distribution New York is the banner State, 52 species being found within its territory; Pennsylvania has 42; Vermont, 45; Michigan has 47; and Florida, by the help of tropical forms, 46. Only 2 species are found in Nevada, and 4 in Wyoming, 4 in the Indian Territory, 3 in Idaho, and but 9 in Iowa. Little Rhode Island has 34. Vermont has the greatest number of species as compared with territory, and may, on this account, lay claim to be the great fern State. Asplenium Trichomanes and Pteris aquilina have the widest distribution, being found, the former in 35, and the latter in 39 States. Polypodium vulgare has been found in 33 States. Adiantum pedatum occurs in 35 States. The rarest fern is Schizæa pusilla, in New Jersey.—*Independent.*

THE VANILLA BEAN IN THE UNITED STATES.—Few things give a better idea of the immense extent of the United States, than the fact that almost any vegetable product of the world will grow in some part of it. It now appears that we have the vanilla; not only growing, but native. Mr. A. H. Curtiss, the well-known Florida botanist, in a sketch of an exploration, furnished to the Florida *Dispatch*, says:

"During another cruise I penetrated the borders of the Everglades, at a point about thirty miles east of Cape Sable. The mainland shore was there skirted with a light forest of mahogany and other tropical trees. Following a creek which issued from it, we soon emerged into a round, fresh-water lagoon, about a mile in diameter, in the center of which was a beautiful round island. A creek emptying into it from the north I call Vanilla Creek, because on its banks grows the only vanilla ever found in the United States. This species (Vanilla planifolia) is a thick, fleshy, leafless vine, which runs rampant among weeds and bushes, simulating, as it were, a slender, green snake in its color, form and curves. This little creek is one of the small outlets of the Everglades; it has cut a channel through the underlying coral-rock, and is bordered with a low growth of saw grass and mangroves only a few feet in height."

SCRAPS AND QUERIES.

WILD TEA.—To the great number of "substitutes for Chinese tea" already on the lists, a Florida correspondent sends us a common weed of that section for name, which proves to be one of the mallows—Sida stipulata.

THE DWARF ALMOND.—Mr. L. B. Case, Richmond, Ind., writes: "During the past year or two I have often mused over the too-common (?) forms of double-flowering dwarf almonds in common cultivation; viz., the rose-colored and white varieties. Professor Gray, in his Field Botany, says: 'prunus nana, * * * handsome rose-colored (or by variation white), usually full-double flowers,' etc.—seemingly acknowledging only one species. Wood says, 'Prunus nana, dwarf single-flowering almond, and Prunus lanceolata, dwarf double-flowering almond, both from Russia.' Sir Joseph Paxton says, 'Amygdalus nana, flowers red, 2 feet high, from Russia,' and 'Amygdalus Siberica, flowers red, 6 feet, from Russia;' also, 'Armeniaca Siberica, flowers pink, 6 feet, from Siberia.' Again, the Treasury of Botany says, 'Prunus Siberica is like a small apricot, only smaller, and Prunus sinensis a small greenhouse shrub, with double white flowers.' Now some of our best-informed and most experienced nurserymen offer Prunus Japonica multiplex, a double dwarf rose almond, and Prunus sinensis, the double dwarf white almond, and perhaps many others name other varieties or synonyms. I have on my lawn an ordinary double-flowering rose-colored variety, probably Prunus nana, and also a form of the white variety, with double white flowers—a little later to bloom in the spring, and the flowers set closely together along the branches, producing at least one-third more bloom than the old variety. Again, it seems to ripen its foliage soonest in fall, turning to a dark, bronzy crimson. I enclose a small branch with this. Do you think, from this imperfect description, the two forms are of the same species (P. nana)? Of course Sir Joseph Paxton's Amygdalus nana and Siberica should read, according to our nomenclature, Prunus nana and Siberica; but what is his Armeniaca Siberica? Is it under cultivation in America, and where can I get it? I should also be very glad to get Wood's single-flowering form, as I have never seen it; but I do not find it offered by any nurseryman. How many of these forms can be reduced to a few? I know that many of the readers of the MONTHLY would be very much pleased to know the synonyms, and also to know just what we are growing. For myself, I most sincerely wish you would do so, and then I hope that anyone having the scarcer varieties will offer them in the advertising department of the MONTHLY, so that we all can know where to procure authentic specimens; for they are certainly a most welcome and meritorious class of shrubs for a large lawn, cemetery or park, to mass with other shrubs. True, the old red variety suckers very badly (the white one in my yard does not), but no one can expect anything in the shrub or plant

line to flourish and prove fully satisfactory without some attention and labor, and why not devote the same amount of time in removing suckers from around an almond that would be necessary to cultivate any other plant or shrub.

"One more question, and I will stop. Does not the fruit of Prunus fasciculata of Utah belong to this section of the genus Prunus? It would probably not prove hardy this far north, but I have often wondered if it would not add new life and vigor to the peach—perhaps by hybridizing. Certainly as a stock to bud upon in our Southern States, I imagine that many of our short-lived trees of foreign origin could be materially benefited by infusing into them some of our native blood, *i. e.*, vitality.

"The *Gardeners' Chronicle* for September, 1st, 1883, just received, on page 266 says, 'Prunus triloba was first described by Dr. Lindley, in the *Gardeners' Chronicle* for 1857.' I have no idea where I could obtain access to it. Is it in any of the public libraries of Philadelphia?"

[A full set of the *Gardeners' Chronicle* is in the library of the Academy of Natural Sciences of Philadelphia—as are almost all works needed for botanical references.

So far as we can judge by the leaves of two double forms, and without any fruit, we should say the double white and double pink dwarf almond are both forms of Amygdalus nana. We have never seen authentic specimens of Amygdalus Sibirica of Loddiges. Prunus fasciculata, of California and Utah, is a dwarfish plant, very nearly allied to the true almond.

About Philadelphia the dwarf almond is so much attacked by a disease similar in its sudden results to the fire blight in the pear, that it is not as popular as it used to be.—Ed. G. M.]

A WILD ROSE.—"N," Louisville, Ky., writes: "We mailed you, two days ago, sample of a flower, etc., of a rose we found growing wild here—that is, one plant. Would like to know name of same."

[This appears to be the Cherokee rose, which, after all, is probably but a form of the Macartney rose—a native of China; and, though "wild," probably not indigenous to America.—Ed. G. M.]

TWINING OF VINES. — "Constant Reader," Shoemakertown, Pa., asks: "Would you be kind enough to give the reason why the Lima bean and the hop vine climb the pole in opposite directions? No doubt it would be interesting to many readers of the MONTHLY. If you would be kind enough to answer in the October number, you would greatoblige."

[Some botanists conceive that the primal form of plant life is membranous, and that it coils to make stem. We might then assume a moss to be formed from some such a plant as a marchantia or liverwort, and eventually a more woody stem be developed. This suppositious coiling may be represented by the funnel-form papers coiled up by grocers or confectioners. The plant, of course, continues through life to take the direction marked out for it at the first coil, in whichever direction that may be. It may be supposed that there are structural peculiarities in the seed which make it easier for the first coil to go in one direction, rather than in the other.—Ed. G. M.]

COLORS OF FLOWERS.—"The enclosed is clipped from an English paper, *Public Opinion*, of June 2, 1883, and "D. W." thinks it may be used in your GARDENERS' MONTHLY:

'Mr. Grant Allen, in his recently published work under this title, briefly sums up his views on the genesis of flower colors as follows: 'Most of the very simplest flowers are yellow. Many of the simple flowers in each family (except the highest) are apt to be yellow. The more advanced members of very simple families are usually white or pink. The simple members of slightly advanced families are usually white or pink. The most advanced members of all families are usually red, purple, or blue. Almost all the members of the most advanced families are purple or blue. The more advanced members of the most advanced families are almost always blue, unless spotted or variegated.' In opposition to the view first enunciated by Goethe, and that now held by almost all botanists and vegetable physiologists, Mr. Grant Allen maintains that the stamens of a flower are not modified petals, but on the contrary, that these last are (as a later formation), modified stamens—a view that will probably receive but few adherents.'"

[We are glad to give the above as a piece of information. It is, however, but right to say that we have read and followed closely Mr. Allen's papers in *Nature*, and do not regard his ideas as having any fair scientific foundation. We look on them as nothing more than shrewd guesses.—Ed. G. M.]

PTERIS TREMULA IN CONNECTICUT.—It may be remembered that a Cambridge correspondent last year took exception to the statement of another that this fern was wild in Connecticut. The latter has made another examination this year and now writes from Torrington: "Since I last wrote to you I have been to see Mr. Slocomb, gardener to C. L. Mitchell, New Haven, Conn., a man possessing a

good knowledge of ferns, and he tells me the one in question is Pteris arguta, not tremula. I cannot say it is really wild here, as I can only find it on a large bed of rocks near by, and how it came here I cannot yet ascertain. But what I am prepared to say is that it is hardy here."

LITERATURE. TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

PROHIBITION OF AMERICAN TREES IN EUROPE.

BY EXPORTER, N. Y.

By one of the last foreign mails our German correspondent sends us clippings from German papers, which we forwarded at once to the State Department in Washington, giving the "Berne Convention" (July 4, 1883) Phylloxera law; according to which England, France, Austria, Hungary, Germany, Belgium and Switzerland, agree not to pass any plants over their border, but either destroy them or return them, even if accompanied by a sworn certificate that no vines have been grown within thirty yards from the shipment; as long as such shipment comes from any country outside of their convention. In other words, they establish a black list, and the United States, of course, are at the head of it.

Now this is a crying evil, for the oath of one man is as good as that of a conventionalist, and our Government should look after this ostracising of plants, and influence these silly laws to be applied in a more moderate form, securing the conventionalists that protection from the plague, they are looking for. But here we have sold this spring, goods to the different countries in the plant line, for fall delivery, and we do not know how to reach our customers.

To you, as an organ in the trade, we direct these grievances, trusting that the press may find a way out of this dilemma and arouse the officials to action. Or is this to be a second "pork exclusion?" Trichinæ, phylloxera, what next? A beastly country ours must be in the eyes of foreigners, if we stand idle. Join the convention? We hardly can, unless we wish to draw a wall around us. But to insist that the oath of an American before a foreign Consul is just as valid as that of any German, Englishman or Frenchman, and claims the same belief, is in our opinion, the duty of our State Department to enforce with those conventionalists.

Since the 12th of July, this law is in force abroad, and we had the grandest trouble to convince German Custom House authorities, that Dutch bulbs were no plants—but meant to become plants (when, as a compliment, a few bulbs were sent from Holland to a friend in Germany). Then we succeeded in getting them passed, but to-day we are informed, the law is applied also to bulbs. Poor tuberose!

[While we are suffering from cabbage worms, pea weevils, codling moths and what not, imported from the old world, it is strange that the old folks should kick up like this—and so absurdly too. The phylloxera is already in Europe, in myriad millions, and far more likely to spread by intercourse among each other, than by anything they may get from us. And England too, a party to this farce! A country which has phylloxera in almost every grape border—which raises "hothouse vines" in almost every nursery—and which hopes, of course, to do a good deal of "shopping" with her associates. America could live and prosper without any of these countries, and might very well afford to shut out all importations of every description from abroad. It could afford to retaliate by just such a regulation. But she has the good sense to know that she cannot get any good at all without the risk of some attendant evil, and is perfectly willing to take the evil with the good, and trust to human knowledge and human progress to improve the good and conquer the bad.

The following letter explains itself:

DEP'T. OF STATE, WASHINGTON,
October 15, 1883.

"*Prof. Thomas Meehan, Editor Gardeners' Monthly:*

"Sir—Your letter of the 5th inst., relative to the prohibition of the importation of plants into the States participant in the Berne Convention of July 4, 1883, has been received. In reply, I have to in-

form you that this Department has already taken action in reference to this subject, by instructions to our Ministers in the principal countries of Europe, and that every effort will be made to have the unnecessary restrictions complained of, removed. The result of the correspondence upon this subject will be promptly made public, for the benefit of those interested.

I am, sir, your obedient servant,
"FREDERICK T. FRELINGHUYSEN."

It is to be hoped, for the sake of common sense in human nature chiefly, that the contracting parties will see soon how silly they have acted. Common sense, however, does not seem to be a very common article among the rulers of the old world. Republics make mistakes sometimes, but these asinine exhibits of the old-world folks, must be a source of comfort to those who have faith in popular self-rule.—Ed. G. M.]

QUALIFICATIONS OF GARDENERS.

BY J. B., FREDERICTON, N. B.

I read with much interest and satisfaction, in the August MONTHLY, page 232, Mr. H. B. Ellwanger's remarks on the Manetti Rose. I have known of considerable use being made of the Manetti, in London nurseries, and have experimented enough to prove the stock to be of great advantage in certain cases, explained so well by the above named gentleman.

I would like to make some remarks on another matter. Some time ago I read an article headed, "The Horse Everybody Wants." This, of course, had reference to breeding and training the right kind of saleable animals. It suggested to me, "A Gardener Everybody Wants." The former must be bred and trained by man, the latter must train himself to be a practical working gardener. The qualifications he may soon find out. From my own experience, few "kid glove" gardeners are kept in the United States; the demand being for working, industrious men.

I think you will find most of the successful horticulturists in the old and new world have been great workers. This applies to every other branch of business. Is not skilful manual labor continually rising in value? The late President Garfield is quoted as saying; "If industry is not genius it is the next thing to it." I have thought sometimes that, in this progressive age, manual labor is much undervalued. Do not the young generation of gardeners need to learn to wash pots quickly and well, to manage fires economically and well, to dig ground well, to whet a scythe, to grade a piece of ground, to cultivate and crop garden or field systematically, and in order? Begin low down and rise, remembering to do a full amount of work, as well as to do it in the right way. Industry is a neccessary quality in all who work for a living. If we take a full week or month's pay, for less than that amount of work, it is not honest. A gardener generally gets, or should get, wages according to quality and quantity of his work. A gardener that everybody wants must be reliable, trust-worthy and having the employer's confidence.

A VISIT TO THE GROUNDS OF C. L. ALLEN & CO.

BY C. E. PARNELL.

It was on the afternoon of a bright and pleasant summer day in the early part of August, that I found myself in the lovely little park that surrounds the railroad station at Garden City. A few days previously a refreshing and invigorating rain had fallen, which had imparted fresh verdure to all vegetation, and caused the well mown lawn to assume a garb of living-green, while the spray from numerous fountains sparkled in the sun. It was through scenes like this, a pleasant walk of ten or fifteen minutes duration, which brought me to my destination—the flower farm of C. L. Allen & Co., where I was so fortunate as to meet with that well-known horticultural writer, Mr. C. L. Allen, the senior member of the firm, who welcomed me in a most cordial manner and, at my request, kindly accompanied me around the farm.

Upon entering the grounds, my attention was first attracted by a fine display of Lilium auratum, covering some three acres of ground, the plants of which, for size and vigor, far surpassed anything of the kind that I had ever seen before—each stalk having from fifteen to thirty buds and blossoms upon it. This is a lily that is considered difficult of cultivation, but Mr. Allen says that if properly cared for, it is as easily grown as L. Ligrinum, and at my request, kindly gave the following directions for its treatment: This is a lily that, like speciosum and some others, forms a new bulb inside of the other for some two or three years, after which it begins to form small bulbs at the base of the stem; and, in order to keep up a stock, these small bulbs should be taken off and planted in a rich, deep soil. It is essential that they be planted deep, in order that the young bulbs may form above the old one, which they will not do if the old one is near the surface; plant at least ten

inches deep, and they will continue to increase and bloom for a long time. If a large bulb be planted near the surface it will gradually waste away. Young vigorous bulbs being the best for planting.

L. tigrinum fl. pl. speciosum and its varieties are also grown in immense quantities, as well as other varieties of this charming tribe, and all of them seemed to be in the greatest vigor and health imaginable. I also saw Hyacinthus candicans for the first time, and I confess that I was quite disappointed with it. It bears a striking resemblance in manner of flowering, but instead of the flowers being in a cluster, they are scattered along the flower-stem and its branches. Mr. Allen thought it would do much better if given a moist and partially shaded situation.

Eulalia Japonica, variegata and Zebrina are also grown in immense quantities. Mr. Allen considers the Eulalias the most ornamental of all the grasses, and considers cut sprays of their foliage indispensible for summer floral-work. An acre or so of Petunias was alone well worth coming to see, one-half being the new dwarf Inimitable—a variety of dwarf, compact habit, the plants never attaining a height of more than six inches, and which are literally covered with regular striped flowers—and for bedding or massing, one of the best. I also noticed some fine plants of the Grandiflora section. I also saw an immense quantity of Gaillardia picta Lorenziana, and from what I have seen of it as grown here and elsewhere, consider it well deserving of a prominent position on the list of unworthy novelties. Balsams are a leading specialty with this firm, and a display of several acres was indeed a surprise to me. I have no recollection of ever seeing more perfect flowers, and I do not see any room for improvement in this respect. Mr. Allen called my attention to the "Perfection," a magnificently formed flower, almost as large as a camellia, and having a longer and stouter stem than balsams generally possess, which makes it just the thing for cut-flower work, the flowers being of a creamy white color.

I also noticed a magnificient collection of Zinnia elegans fl. pl., the flowers of which for size and shape could not be excelled and, as a further evidence of their superior quality, I may be permitted to state that Mr. Allen was awarded the first premium for his collection at the September, 1882, exhibition of the New York Horticultural Society. Here I also saw a very superior strain of the beautiful Zinnia Haageana. Cannas, Delphiniums, Pansies, Celosias are also grown in immense quantities, and all of the very best quality, showing skill and care in their selection and cultivation. Ten acres or more of tuberoses, (pearl and double) grown for their bulbs, was a leading feature of this establishment, and so carefully were they cared for that not a weed was to be seen amongst them. And last, but not least, were the Gladiolus and, I admit, I cannot begin to describe them: there they were in all their beauty before me, acres being occupied with them, and almost every shade of color being represented, from the bright vermilion scarlet of Brenchleyensis, to the almost pure white of La Candeur.

Space could not be afforded me to mention the numerous varieties, but a few of the most beautiful were Virgil, Meyerbeer, Aure, Dr. Lindley, Isaac Buchanan, Pasquin, Flamingo and Gen. Sheridan, the latter being a superb seedling, not yet ready for distribution.

A noticeable feature of this establishment is the remarkable accuracy in the names of the different varieties. Handling as they do such an immense stock (over a million and a half of Gladiolus bulbs last season) it would seem a very difficult affair, but the business is so systematized that mistakes are almost impossible. Another striking feature was the entire absence of weeds. Mr. Allen says it is a rule with him to cultivate thoroughly, a cultivator being run through everything at least once a week, and, if at all possible, after every rain, even if it is twice or three times a week—this done very little hoeing is required, and the ground is left in the best possible condition. Mr. Allen says that, to most persons, weeds are a blessing in disguise—they cultivate and hoe to destroy the weeds and are rewarded with large crops.

Unfortunately, I was limited as to time, which prevented my taking more copious notes, but if this brief description will prove of interest to some of the readers of the MONTHLY it will not have been written in vain.

OUR TRIP EAST.

BY "PILGRIM."

We started from—well, it would not interest the horticultural world to know where, so we will allow that to remain unknown. Our first stop was at Allegheny City, Pa., where we visited the Allegheny Parks, of which Mr. William Hamilton is the efficient Superintendent, and who is ably assisted by Mr. John Herron, who has charge of the Floral department. Making ourselves known, we received kind and courteous treatment, and were

highly pleased with the excellent appearance of the Parks on the whole, and some of the bedding in particular. We saw two very fine pieces of carpet bedding; the principal features of each were medallion portraits, one of Lincoln, the other of Washington. These were composed of Echeveria, and the two medallions contain over 5,000 of these plants. On either side of the head of Washington were beds of different sorts of alternanthera; and here we saw, for the first time, the new yellow alternanthera, Aurea nana, in contrast with such sorts as Amœna, Spectabilis and Aurea. Messrs. Hamilton and Herron say they received a few plants of this new sort from the originators, Messrs. Woods, Beach & Co., New Brighton, Pa., on trial. They have it planted in the most conspicuous position in the Parks. The chief merits of the plant are its bright, yellow color, and dwarf, compact habit. Mr. Hamilton says it is all that could be desired for a yellow-foliaged plant for carpet bedding and borders. Although, on account of the smoke from bituminous coal, some plants and trees do not flourish in these grounds, yet the Parks are the pride of the citizens of Allegheny City, who are to be congratulated upon their possessions. We passed hurriedly through the greenhouses, and saw some fine specimens of rare and beautiful palms, dracenas, crotons, orchids, etc. We would have gladly lingered in these grounds and greenhouses, but our time was limited, and we were reluctantly compelled to depart.

It was years since we had visited the Allegheny Cemetery, now located in the Seventeenth Ward, Pittsburg, so we concluded to go and see what changes time had wrought. Having reached the main entrance, on Butler Street, we passed through the gate and rested for a few moments in the large reception room. Their large, commodious office building is built of cut stone, and presents a very imposing appearance. The tower, containing the large clock, is octagonal in form, and is nearly 100 feet in height. Upon making inquiry for our friend John Chislett, Esq., Superintendent, we were pained to learn that "he sleeps the sleep that knows no waking." Though he has departed, the improvements made under his careful supervision still remain. Our next inquiry was for Mr. David Woods, the Superintendent of the floral and nursery department; and were informed that he had resigned to accept the superintendency of the Homewood Cemetery, in the eastern part of the city, a comparatively new cemetery, of some 200 acres in size. We would gladly have called to see him, but time would not permit. We found our old friends gone, with feelings akin to those of the poet, when he wrote:

> "When I remember all
> The friends so linked together
> I've seen around me fall,
> Like leaves in wintry weather,
> I feel like one who treads alone
> Some banquet hall deserted;
> Whose lights are fled, whose garlands dead,
> And all but me departed."

We wandered through these grounds, our minds intent upon the past and the prospects of the future, and did not care to make notes of the changes. When we next visit this great city of the dead, we shall endeavor to picture it for the readers of the MONTHLY to a greater extent.

As a change of scene will cause a change of minds, we then started for the hotel, intending to have a good night's rest, preparatory to proceeding further upon our journey. On our travels through the avenues of the Iron City we saw many fine residences, whose grounds displayed taste and a large expenditure of money in the way of floral ornamentation.

The next morning we proceeded upon our journey towards the city of Brotherly Love. After securing quarters and lunch, we wended our way to Laurel Hill Cemetery. Arriving at the north entrance, we wandered through it, and thence to the central division, and passing through this portion, we then emerged into the Southern portion, and were highly pleased with the appearance of them, which were in perfect order. The cemeteries of the East are progressing fast, and fully up to the modern improvements of the younger cemeteries of the West. We also had the pleasure of visiting the greenhouses of David Fergusson & Sons, just opposite the Cemetery, where we found a very choice selection of plants, in an "A 1" condition. We were accompanied by Mr. Fergusson, who pointed out to us all new varieties, etc., which were quite numerous. After seeing all that could be seen there, we then took a short ride down the Schuylkill to Fairmount Park, where we visited Horticultural Hall, and saw some rare plants, and beautiful bedding of alternanthera and echeveria, in artistic style, which amply repaid us for our visit, as it was grand, and impossible to describe on paper. On our return to the city we stopped for a few moments at Girard College; here we found what we considered the finest bedding we had seen, arranged in the grandest possible style and new and original designs; two of each kind opposite each other, on the path leading to the main building. These were planted with echeveria, alternanthera of different varieties; the different foliaged gera-

niums were also used with good effect, and here and there a large palm to add beauty to the scene.

We then departed for the metropolis, and arriving there, we visited Central Park with much pleasure, as it had been just twelve years since our last visit. But here we were disappointed; it being far behind its record in former years in our opinion. It seems as though it had been on the down-grade instead of advancing; consequently our stay was short. We then betook ourselves to Greenwood Cemetery, in Brooklyn, and were highly elated with this beautiful resting place of the dead. The roads, walks, and everything in such good order, that it certainly reflects great credit upon its management.

We must here bid you farewell, trusting to be able to continue our journey to the eastward with you in another issue, with your kind permission.

EDITORIAL NOTES.

To Intelligent Correspondents.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

A School of Horticulture at the West.—Concluding his address at the Horticultural banquet in Philadelphia, Mr. Oliver Gibb, Jr., of Minnesota, said: "One word more, Mr. President, and now I want the attention of the millionaires, as I see several of them present. As we have looked admiringly and may be with a little envy to-day upon the smiling face in marble of the sturdy old merchant, in Girard College, have not some of you on this occasion, or have you not at some other time, had the thought come into your mind: 'Oh, what could I do with my wealth to create such a memorial as this institution? What would do so much good, what would make me so honored and so loved as this? What other institution can I endow, that will give me a place among the few names that are not to fade out of the memory and records of man, and enable me, if perchance I shall be permitted, when the great change comes, whatever it is, to retain an interest in earthly scenes, to look over my work in this life and watch and enjoy its beneficent results hereafter?' It may seem to you that the places of great endowments are all filled, that nothing else can be devised beyond the commonplace; but gentlemen, the philanthropist who comes forward to found and endow a school of Horticulture and Forestry in the Northwest will provide for the greatest need of the times and for all future time in that golden empire, and will place his figure in bold relief against the Western sky, to be gazed upon with veneration and affection, and grow brighter and grander in the view; and when in the far future mere military heroes shall be forgotten or looked upon as curiosities of a barbarous, or semi-barbarous past, every forest in the West, every improved fruit or flower, every improvement of the face of nature in city or country, from the advancement of the culture of plants, every happy home, will be associated with his name. The whole question, whether hundreds of square miles of the Northwest shall remain, or relapse into a desert, or be made to blossom into a land of homes; the question whether other hundreds of square miles shall wait for generations to grow comfortable or by the short cuts of knowledge prove horticulture and forestry a relief to those who are there now, or are soon to follow, can be solved by such an institution, liberally endowed, as no other means can do it. And when horticulture and forestry shall become established over the West by such an institution, nothing else can so train young men and young women in these learned professions, to continue the work to the end of time. Our State colleges of Agriculture are doing all they can for these sciences, but their means are too limited, and their liberty is too circumscribed, by lack of patience and appreciation of the average politician who goes to the legislature. I am sorry to say they are not all the pets of the legislature, as it is said is the one in Michigan. We want a school that can work with scope and means and freedom on long headed and level headed plans for the public good and yet be out of reach of popular clamor. We want a school established with a central head and with experimental stations in the several natural divisions of soil and climate, a school that will know no State lines, and nothing that is not or not likely to be practical. Where is the happy millionaire or syndicate of millionaires, who will give it to us?"

The Discovery of the Potato in Arizona.—This is the title of a very pleasant paper in the *Overland Monthly* for May, by Mr. J. G. Lemmon. Mr. and Mrs. Lemmon collected a quantity of the tubers of the native Solanum Fendleri and Solanum Jamesii; and these have been widely

distributed for trial under cultivation. Mr. Lemmon gives a history of the potato, and of these Arizonian forms in connection therewith; endeavoring to give all that has been written in regard to them. He singularly overlooks what is, perhaps, the fullest account of any trial made with them, given in the proceedings of the Academy of Natural Sciences of Philadelphia, for October 13th, 1874, and which work must be in the library of the California Academy of Sciences, and which paper gives the result of eight years trial with one of these species. It is there stated that this species when first planted had tubers about the size of a bullet, and had the bark or skin roughened by the free development of tuber cells. At the end of this period some had developed to tubers nearly as large as a walnut, oval, flattened, and with the smooth skin of a modern potato—and this, not by sowing the seed, but merely by selection from the tubers raised from the original tubers. It is remarkable, seeing how much that communication to the Academy favors Mr. Lemmon's idea of the probable origin of the potato from the Arizona forms, that, in a chapter purporting to go over the whole ground, he should have overlooked this.

THE PROFITS OF MISFORTUNE.—A funny paper gives the following:

"Miss Gushington (to young widow whose husband has left a large fortune): "That is the fourteenth mourning costume I have seen you wear in three days, and each lovelier and more becoming than the other." Young Widow: "Oh! my dear, I have forty; but such a bother as they were to have made! At one time I almost wished that poor dear George hadn't died!"

This would seem extravagant, did we not find something in every-day-life to match it. Riding around through the suburbs of Victoria, admiring the pretty gardens, and getting information from the hack-driver, as usual with travellers, he told us of one nice place, that the owner and her husband started life as pie-bakers in that town, and wound up by remarking, "an shure, sha has now the plashure o' bayin' a rich widdy."

TREES BY MAIL.—America is not by any means always in the rear. The English papers are recording, as a wonderful thing, that Mr. Gladstone recently received a tree by mail! They do not seem to know that thousands—nay millions, have gone through the mails in America, for years past—some even bringing up in their own country after their postal experience.

PORTRAIT OF J. J. THOMAS.—It always seemed to us scarcely fair that our most useful men should not know while living how much the rest of the world felt indebted to them. On this ground, we decided to give as an annual frontispiece to our volumes a portrait in first-class style, of some of our most distinguished authors. Last year we had a portrait of the author of Barry's Fruit Garden; we have selected for our coming illustration the author of Thomas' American Fruit Culturist. As these are given in first-class style, wholly at the cost of the publisher, it was thought it would be a pleasant surprise to those whom the magazine delighted to honor, and nothing was said till the portrait appeared. This was found to have its disadvantage. Many wanted extra copies with the portrait of their favorites, but the publisher only prints enough for his December edition (and the usual over copies), which, however, is always a very large one. So this announcement is made, that we shall have a portrait of J. J. Thomas, in our December number. Those who desire extras should order them before Nov. 15th to insure a supply.

SHORT POSTAGE—A REMARKABLE POST OFFICE LAW.—Some time ago we received a large Public Document which, on opening, contained the stunning announcement that some dunderhead had sent us a letter without sufficient postage, and that if we sent the United States the necessary nickel, we should have the inestimable privilege of perusing the contents of said document. As every editor knows, one-half his mail is only material for the rubbish-box. However, we wasted a letter, and the "necessary postage" was sent on. In due course, the letter came on with the following placard pasted all over it:

"This Letter was held at the Philadelphia Post Office as 'short paid,' and forwarded afterwards, upon receipt from the addressee of stamp to cover deficiency."

It was not a letter, but a printed circular inviting us to walk two miles to see a raspberry. "Dear Sir," had been written with a pen, and "27th" in figures. This made it a "letter." By the time we had finished the negotiations with the government the date was passed; and all the time, expense, and loss of temper went for nothing at all.

Now, why should all this tribulation be put on the person to whom a letter is addressed? Who suggested this miserable piece of tomfoolery? His name ought to be attached to a brainless pumpkin and exhibited at an agricultural fair. If a letter is 'short paid,' why not send it back to the writer, even if necessary to cut it open to see who wrote it?

MEAN TRICKS IN TRADE.—A lady receives a

box of flowers which she ordered from a nurseryman, and finds therein a card telling her that though the flowers are very nice, she would have done better if she had gone to ———, for her purchases—naming a rival in business, of the other firm. The lady sends the card back to her florist, with a kind letter of admonition. All of these papers have been placed in our hands. The nurseryman thinks his rival has hired some express hand to write these cards and slip them in his boxes. The card is certainly written on just such paper as is in use at express offices, and the handwriting just such as is familiar to business men. It does look as if our correspondent's suspicion is correct. We should fancy, however, that no harm would result from such meanness. No honorable lady or gentleman, would take their trade away from a fair-dealing person, by such a transparent trick as that.

SCRATCHING FOR WORMS.—A jolly correspondent in the West writes: "I am glad to see that your magazine, while teaching those who have made a little money how to get the most enjoyment out of horticulture for their spare cash, does not forget that there are some readers who have yet to scratch continuously in the earth for worms in order to make a living. What we poor wretches need, is more worms. We like to have you keep us in mind that there is something better in store for us some time. Don't let us forget it. I enjoy very much the prospect—but when you tell us just where another good fat worm lies hidden, you don't know how great is the encouragement to keep on scratching. Therefore, good Mr. Editor, keep up your good worm-breeding lessons, at every opportunity. Your many practical hints have been of great value to me. I have never sent a hardly-earned $2.00 for a year's subscription, but I have found I have been able to make much more than that out of it, through the year. Your lessons on seed-sowing were of special value to me. I used to think I was cheated when half my vegetable seeds rotted in the ground. Since I sowed them shallow, pressed the earth firmly, and shaded a little from over-hot sun, we never miss, and we always have plenty to eat from our little garden."

WORK OF COMMITTEES.—Very few people know of the vast amount of work which falls on the members of local committees, whenever any one or two bodies meet together. At the recent meeting of the American Pomological Society, in Philadelphia, most of this hard work fell to the lot of Messrs. Mitchell, Harrison and Springs. Considering how very much they attempted, it is remarkable that there were so few hitches, and they well earned the praises we have heard so freely given to them.

ADDRESSED ENVELOPES.—It is with the best intentions that persons send envelopes, stamped and addressed, when an answer may be expected. But it is a great bore to a busy man, who has scores of letters with every mail, and cannot answer at once. When ready to reply, the "stamped and addressed envelopes" are either forgotten or cannot be found. On our table is a basket full of these nuisances. A stamp is all very well. They can be thrown into the stamp-box as received. This has been noticed before, but some people do not live and learn as they should do.

DR. ENGELMANN.—Our magazine had barely appeared, before a note from Boston came from the Doctor, protesting against the suggestion that "he might never return." It is at any rate a pleasure to all who know of his many good botanical labors, to learn that he is again among us, and with the promise of many more years of usefulness.

COLONEL M. P. WILDER.—Through temporary ailment, Col. Wilder was not able to preside at the recent meeting of the Pomological Society in Philadelphia, but his numerous friends will be glad to learn that he seems as active and full of life as ever. We note, by the Boston papers, that on the 25th of Sept., he passed his 85th birthday, and that the leading representatives of the city and State, gave a public dinner in honor of the occasion. Among the speeches of the evening Mayor Palmer said that "the merchants of Boston, with a unanimity of judgment and affection, regard Col. Wilder as one of their noblest leaders and princes of commerce. He felt especially proud of him also as a son of New Hampshire, and recalled the high honor and warm regard in which he was held in that State. And since he came to Boston, even the history of the splendid achievements of her merchants, among whom he was eminent, stands to-day eclipsed by the one product of magnificent manhood which you honor this evening. His admirable character, the highest and legitimate conclusion of the calling of merchants in Boston is its fit representative all over this country and all over the world. Not only would the speaker express his personal respect and esteem, but also the pride love and reverence which every man who walks the streets of this city feels for the distinguished guest."

MR. WILLIAM FALCONER.—Mr. Charles A. Dana is reported to have secured Mr. Falconer, as gardener at Glen Cove. We sympathize with Cambridge Botanic Garden in its loss.

DIRECTOR OF THE GARDEN OF PLANTS AT PARIS.—The Directorship, vacant by the death of Decaisne, has been filled by the appointment of Dr. Ed. Bureau, Professor of Botany in the Museum of Natural History.

THE CONSERVATORY.—This is a new monthly magazine, devoted to the interests of the florists of New York, and elsewhere. There is much in it of interest to the cultivator of flowers, as well as commercial growers. W. McKlen Petingale, is the Editor.

TOWNSEND GLOVER.—This well-known Entomologist, died suddenly, in Washington, D. C., on the 8th of September, in his 71st year. He was an Englishman, but came to this country when a young man. For many years he contributed largely to the entomological literature of our country, and especially to the Patent Office reports on Agriculture.

DANIEL SMITH OF NEWBURGH.–Among the losses to horticulture of the past month, must be recorded the death of Daniel Smith, of Newburgh, a zealous amateur, and one of the prominent founders of the Newburgh Bay Horticultural Society, of which he continued its Treasurer from its first organization. His death occurred on the 26th of September. He was in his 73d year.

HERMAN MULLER.—This distinguished botanist died on the 25th of August, at Prad, in Switzerland, of pneumonia. Although but in middle age, he did much to render botany popular, by his numerous curious observations on the relation of insects to flowers.

THE AMERICAN JOURNAL OF FORESTRY.—The work is to be discontinued henceforth, through want of patronage, the publisher says. Its hasty discontinuance is to be regretted, as there is surely interest enough in the subject to support a special magazine.

JAMES LITTLE OF MONTREAL.—On the 2d of October, American Forestry lost an able friend, in James Little, who died at his residence near Montreal, in his 80th year. Mr. L. was born at Londonderry, in Ireland, but came to Canada in his 19th year, and by indomitable perseverance, intelligence and industry, became one of the wealthy and one of the most influential men in the Dominion. The protective policy, which has given such an impetus to Canadian home industry—railways, lumbering, cloth mills, flouring mills, public school education, banking, and numberless works which are now making Canada prosperous—owes much to his advocacy, personal services, and cash capital. Always at work, never at rest when a good object was before him, he continued to labor for the public good, almost to the day of his death. Such men as he build countries. Few who reap know who sowed; but his chief pleasure was in feeling that he was helping to make the world move, and this was all the reward he hoped for, or cared to receive, in this world or the next. A more unselfish man, perhaps, never lived.

HORTICULTURAL SOCIETIES.

COMMUNICATIONS.

PRESIDENT WILDER'S ADDRESS.

(Concluded from page 320.)

RULES OF POMOLOGY.

I have the pleasure to announce that during the present session the committee appointed at our last meeting to prepare a Code of Rules in regard to the Nomenclature of Fruits, will present their report. This I have examined carefully, and desire to say that it meets my entire approval, and I tender my sincere thanks to the Hon. Mr. Lyon, its chairman, and his associates, for the able and judicious manner in which they have discharged their duty.

In former addresses I have spoken to you of the importance of the establishment of short, plain and proper rules, to govern the nomenclature and description of our fruits, and of our duty in regard to it; and I desire once more to enforce these opinions on a subject which I deem of imperative

importance. Our Society has been foremost in the field of reform in this work, but there is much yet to be done. We should have a system of rules consistent with our science, regulated by common sense, and which shall avoid ostentatious, indecorous, inappropriate and superfluous names. Such a code your committee have in hand, and I commend its adoption. Let us have no more Generals, Colonels or Captains attached to the names of our fruits; no more Presidents, Governors or titled dignitaries; no more Monarchs, Kings or Princes; no more Mammoths, Giants or Tom Thumbs; no more Nonsuches, Seek-no-furthers, Ne plus ultras, Hog-pens, Sheep-noses, Big Bobs, Iron Clads, Legal Tenders, Sucker States or Stump-the-Worlds. Let us have no more long, unpronounceable, irrelevant, high-flown, bombastic names to our fruits; and, if possible, let us dispense with the now confused terms of Belle Beurre, Calebasse, Doyenne, Pearmain, Pippin, Seedling, Beauty, Favorite, and other like useless and improper titles to our fruits. The cases are very few where a single word will not form a better name for a fruit than two or more. Thus shall we establish a standard worthy of imitation by other nations; and I suggest that we ask the coöperation of all pomological and horticultural societies, in this and foreign countries, in carrying out this important reform.

As the first great national Pomological Society in origin, the representative of the most extensive and promising territory for fruit culture of which we have any knowledge, it became our duty to lead in this good work. Let us continue it, and give to the world a system of nomenclature for our fruits which shall be worthy of the Society and the country—a system pure and plain in its diction, pertinent and proper in its application, and which shall be an example, not only for fruits, but for other products of the earth, and save our Society and the nation from the disgrace of unmeaning, pretentious and nonsensical names, to the most perfect, useful and beautiful productions of the soil the world has ever known.

Every year brings additional proof and confirmation of our predictions in regard to the wonderful progress and facilities for fruit culture in this western hemisphere. This impresses me more and more strongly with the duty of giving a right direction to one of the most important sanitary and benevolent industries of our land, and as far as possible, controlling the recommendation of the host of new fruits of little merit, which are being constantly brought to notice; and while commending and disseminating all good varieties, let us, if possible, restrain the flooding of our country with those of inferior quality and little value. Let us use our utmost exertions to discourage and restrain the outrageous deceptions, which every returning season brings, by new fruits sent forth with the highest praises, as if superior to anything before known, but which in a few seasons are found no better than many old kinds, if as good. The plea of ignorance cannot be urged in extenuation of such practices, while the means of information are as accessible as they are now. Such deceptions no honest or honorable man would practice.

PRODUCTION OF NEW FRUITS.

It is now more than thirty years since I first called the attention of this Society to the great importance of producing fruit from seed, in order to originate and obtain such varieties as might be adapted to the varied climate and sections of our ever-increasing and immense territory. And now, again, in fulfillment of my promise never to cease doing so, I beg to ratify and enforce what I have said in my former addresses.

It has long been known that varieties raised on our own soils, and in our own localities, are generally better suited to our various regions than those from foreign lands; and although we have some varieties from abroad of great excellence and wide adaptation, there are, comparatively, only a few out of the thousands of foreign kinds which we have proved in the last fifty years, that now remain in general cultivation. This fact is now generally acknowledged, and hence thousands of our pomologists are engaged in this most interesting, beautiful and praiseworthy employment of raising American kinds. Formerly the accessions to our catalogue were from the Old World; now they are mostly of American origin, and so it will continue to be in future time. These are benefactions not only to our country, but the world. He that originates a new and valuable fruit, suited to general cultivation, is as much a benefactor of mankind as he who discovers a new principle in science which increases the comfort and happiness of our race.

Natural fertilization, as I have told you before, unaided by the hand of man, is as old as creation, but the knowledge of manual fertilization, the ability of man to assist nature in the process of improvement, seems to have been mostly withheld from us until the present age. Wonderful is this fact, but it is not more so than the unlimited extent to which it may be carried by the genius and sagacity of him who would coöperate with nature in this enchanting labor.

Strange, indeed, that this art should have been held in suspense for so many ages, not until our own time to be brought into practical use. But, thanks to the Disposer of all temporal concerns, it has now come as the harbinger of a progress which is to revolutionize and improve the fruits of the earth while time shall last. Thanks, too, to Knight, Herbert, Lindley, Darwin, Gray, and other teachers of later times, for the lessons of wisdom, which have encouraged us to prosecute this most noble work.

The process of fecundation was known far back in the centuries of the past, but not for the production of new and improved varieties of plants. From the days of Pliny to the present time, the custom of suspending the blossoms of the date palm over the trusses of the fruit-bearing trees, was known to be necessary for the production of fruit. So Tournefort and Linnæus understood the sexual order of plants; but we have no facts to show, so far as I know, that either of these writers had a knowledge that the crossing of different species and varieties would produce from the seed

a new variety, which would possess in a greater or less degree the characteristics of the parent plants, and it is doubtful whether Duhamel, Van Mons, or Noisette were acquainted with this wonderful art for the indefinite improvement of our fruits.

This is the art that doth help nature, and great as has been the progress in our time, it is but as the dawn of that day when every section of our varied climes shall be furnished with products of the earth as well adapted to each as the people who inhabit them. How grand the acquisitions of this art in our day! It is only about fifty years since Mr. Hovey, myself, or other cultivators of our country, attempted the hybridization of fruits or flowers. Now the knowledge of this art is as well understood as the cultivation of the soil. These are the means provided by an all-wise Providence for the improvement of our fruits. Would that Prince, Downing, Brincklè, and those other pioneers who have gone before us, could now witness the amazing advances which have resulted from their labors in this cause. O that I could live to participate a little longer in the glorious harvest which is to be gathered from the influence of this art in improving the fruits of our land. These are benefactions which you will leave for the generations that are to follow you—memorials of your love of nature, of home and kindred, which shall live in the hearts of grateful millions, long after you shall have been sleeping in the dust.

Thus have I spoken for a long course of years of the importance of this branch of our duty. Thus would I preach while life shall last. "Plant the most mature and perfect seeds of the most hardy, vigorous and valuable varieties, and as a shorter process, insuring more certain and happy results, cross and hybridize our finest kinds for still greater excellence." And should my muse be able to reach you from the spirit land, she would, as with telephonic voice, still chant in your ears the same old song,—

> Plant the best seeds of every good fruit,
> Good fruits to raise, some lands to suit:
> Fruits which shall live, their bounties to shed,
> On millions of souls, when you shall be dead.
> These are creations that do the world good.
> Treasures and pleasures, with health in your food;
> Pleasures which leave in the memory no sting,
> No grief on the soul, no stain on Time's wing.

IMPORTANCE OF THE SOCIETY.

With the establishment of the American Pomological Society, a new era dawned on the science of fruit culture on this continent. The spirit that animated Van Mons, Knight, Noisette, Esperen, Bivort, and other savants of Europe, reached our shore and spread its benign influence across our continent; and wherever the school, the church, or the foot of American civilization has found a home, there our fruit-culture has been seen to follow as the handmaid of refinement, health and domestic comfort. This enterprise has now awakened a zeal through our borders which was never before known in the annals of pomologieal science. Strange, indeed, that it should be left for us of this new world to establish the first great National Society for its promotion—a society which embraces in its organization the largest area and the most varied climate and soil of the globe, where almost all fruits may be grown with success.

The progress of fruit culture in our land is indeed wonderful. To encourage this by a cordial spirit of intercourse, to elicit and disseminate correct information in regard to the fruits of our vast territory, and to direct, control and advance this most important branch of terraculture, were the objects in view; and thus to establish a pomology for America which shall endure long after its founders shall have passed from the earth.

Few are aware of the powerful influences which this association has exerted and is exercising on the pomology of our country. Its organization covers our entire continent, and its importance and usefulness is everywhere, both at home and abroad, highly appreciated and acknowledged. No event in the history of pomological science during the present century has been fraught with such beneficent results as those which have transpired since the founding of our association. This institution, now in the thirty-fifth year of its existence, embracing as it does official representatives of the best experience from every section of our immense domain, all working in harmony to carry out our work to higher and higher degrees of improvement, has assumed proportions which are not only national but continental, and embraces in its organization the largest territory and the most wonderful facilities for fruit culture on the globe.

Other societies for the promotion of pomology have been formed and are powerful adjuncts—other societies will rise up to aid us in the future, but the American Pomological Society will continue to be, as it has been in the past, the acknowledged authority of pomology for this western hemisphere.

So may it be, so may it spread its benign influences over our whole continent, until every man, woman and child shall participate in its enjoyments, and all realize the blessings of paradise regained on earth.

With a territory unequalled in extent and in variety of soil and climate for the growth of fruits, our Society naturally became the leader and conservator of this great interest on this continent. And thus, in the order of Providence, it has been the herald, the protector and almoner of one of the most important departments of our industries. Nor is this all. Its example and its formula of business proceedings and catalogue of fruits, have been adopted not only by our American societies but by the nations of the old world. Well and worthily has it fulfilled the design of its founders. Long may it live to carry on and perfect its glorious mission.

Such, gentlemen, is the magnitude of our association, and on you and those who are to succeed you, depends the great duty of fostering and perpetuating it through the generations of all coming time.

PROTECT, PRESERVE and PERPETUATE it, and your names shall be enrolled as benefactors of our land and of mankind!

John J. Thomas

THE

GARDENERS' MONTHLY

AND

HORTICULTURIST.

DEVOTED TO HORTICULTURE, ARBORICULTURE AND RURAL AFFAIRS.

Edited by THOMAS MEEHAN.

VOLUME XXV. DECEMBER, 1883. NUMBER 300.

FLOWER GARDEN AND PLEASURE GROUND.

SEASONABLE HINTS.

It is now twenty-six years ago since the Editor took pen in hand to prepare the first number of the GARDENERS' MONTHLY. It has been a long term of very hard but very pleasant work. Large numbers of those who subscribed and read what he then wrote have since gone to their long homes, but the homes of those who have taken their places are still to be made beautiful. The elements with which we make beauty are ever new, so that we not only have new readers, but have constantly new things to say to them. But sometimes the old will bear repetition. An old sermon is often as profitable as a new one, and from what we see around us it is worth repeating that thinning out at this season should be the rule in every well-ordered place. Trees and shrubs must be planted thickly at first, or we have to wait half a life-time for shelter or fine effect. A few should be taken out every year. Sidewalk trees especially are almost always too thick after some years. Where the trees are not entirely taken away, judicious pruning is an advantage. Branches should be cut close to their source, so that the wound may heal over. If the scar is large, paint it. The rotting of wood after a branch is cut off often starts decay in the whole tree. Weakly and weatherbeaten evergreens are improved by pruning. But in their case the leader must be cut at the same time, even though we have to train up a side branch to make another leader. Sometimes rare evergreens raised from grafts or cuttings, show little disposition to make leaders, but they will do it if severely pruned. Poor evergreens are improved also by a top dressing of very rich manure. The spruce family are great lovers of shelter. Where winds are keen and cutting, pines should be employed. The White Austrian and Scotch are still the most approved. For dwarf evergreen to stand wind, nothing equals the dwarf mountain pine. What is known in nurseries as Mugho pine, Mountain, and Dwarf pine, are all forms of one thing. Pinus Cembra is a beautiful plant for cutting by windy situations, and intermediate in growth between the dwarf and the larger pines.

Manure is good for lawns and flowers in beds for the summer, and this should be remembered at this season.

If not yet done, gather in the "bag-worms," especially from evergreen trees; and where the soft cottony cocoons of the Orgyia or "cotton caterpillar" are sheltering on the rough bark of trees, destroy the eggs with a hard brush. Birds are all right to help keep down insects, but a little hard labor is also excellent.

Variety is always pleasing, and at this season study a little how to have differences from last year at little cost. It is often as easy to have change at a small expense, and as pleasing, as when a large sum is involved.

It is a pleasure to note the progress of taste in ornamental gardening. Railroads and public establishments were at one time the leading exemplifications of beastliness in their horticultural surroundings, now they often lead off in garden beauty. Summer boarding-houses for fashionable people were also until recently far back among barbarians, but many of these now have beautiful gardens and grounds. Altogether we feel proud of our twenty-six years of labor; for surely we must have had a hand in this progress.

COMMUNICATIONS.

CARPET-BEDDING AT W. J. GORDON'S, GLENVILLE PARK, CLEVELAND, O.

BY EDWARD ROBERTS, CLEVELAND, O.

There has appeared from time to time in the various horticultural journals a considerable share of adverse criticism with regard to the good taste of what is known as "carpet" or "patchwork" bedding. Numerous attacks have also been made upon it by would-be smart writers in the daily press, whose knowledge of the subject about which they wrote was, to say the least, extremely limited. Yet notwithstanding all the abuse which has been heaped upon it, the fashion has more than held its own, as is evidenced by its increasing popularity year after year. I have no intention however to enter into a defence of the merits of the "patchwork-quilt" system, within the limits of the present article. Doubtless like most other things on this mundane sphere too much of it would be likely to create nausea. My intention just now is to merely place before your readers a brief, unvarnished description of some of the more striking combinations which I saw in the gardens at Mr. Gordon's charming residence at Glenville.

Before entering into details a few prefatory remarks descriptive of, or at least giving some idea of the general appearance of Glenville Park, may be more or less to the purpose. In the first place then, I may state it is of considerable extent, containing nearly two hundred acres. As regards situation, nothing could possibly be more delightful, commanding as it does some of the most beautiful views to be found on Lake Erie. The surface is of an undulating character, and hill and dale, wood and water, all combine to make up a series of landscapes of rare beauty. Nor has art been altogether overlooked by Mr. Gordon in laying out his lovely demesnes. But then it has been introduced with such good taste, and in such excellent keeping with the surroundings, that we are perfectly justified in saying that

> "this is an art
> Which does mend nature,—change it rather: but
> The art itself is nature."

I here have special reference to the rockwork and grotto that overlook the lake, and which have been put together in such a natural way as would be almost certain to deceive any but those who have had considerable experience in such work. Were it not for fear of trespassing too far on the editor's kindness, I should like to enter into some particulars with regard to the formation of this rockwork. I should also like to speak of the crystal spring which flows within its subterranean chamber, and from which chamber a secret stair leads to the summit of the pile, after reaching which it would be necessary to call to mind all the superlatives with which we are acquainted to do anything like justice to the glorious view which bursts upon our sight. All this, however, must be left to the imagination of your readers—possibly the wisest course to adopt under the circumstances—as well as the many other points of interest to be met with by the visitor, and return to the special subject I intended in commencing this article.

Entering by the eastern gate (which is contiguous to the dwelling-house), we at once find ourselves in the flower-garden and attention is immediately arrested by a large oval bed of Dracæna terminalis, surrounded by a band of Funkia variegata, and having an edge of Echeveria secunda glauca. The color of the Dracæna was wonderfully rich, very "much more so" than when under glass, and the contrast between it and the Funkia and Echeveria made up a picture of rare beauty. Close by, under the shade of some noble old forest trees, is a large tent elegantly fitted up and offering a most welcome retreat from the heat and glare of the mid-day sun, its attractions being greatly enhanced by having some noble specimens of palms and cycads planted around and partly enclosing it. Amongst others are noticed the following as being exceptionally fine, viz.: Cycas revoluta, Cibotium Scheidii, Dicksonia antarctica, Cyathea medularis, Caryota urens, Seaforthia ele-

gans, Latania borbonica and Phœnix Australis. We next come to what I consider one of the most striking and pleasing beds I have ever seen. The bed is circular in shape and about fourteen feet in diameter. The center was filled with variegated Stevia, surrounded by Achyranthus Gibsonii, planted in the form of a star, the points of which reached the edge of the bed; the spaces between the points being filled with Pyrethrum Golden Feather, in which circular panels of Ageratum John Douglas were inserted. The colors in this bed were as clearly defined as if they had been laid on with a painter's brush; not a leaf or spray appeared out of place, and the plants were so close and even as to forcibly remind us of a design worked out in Brussels carpet. Of course this very fact will cause the critics to exclaim "Why not have the beds covered with boards and set a painter to work on them?" Such arguments as this however will have no effect we fancy in stopping the carpet-bedding boom.

My attention was next called to what Mr. Gooding correctly designated, the "hearth-rug" beds. One of these was planted as follows: Center diamond of Kleinia repens, surrounded by Alternanthera paronychoides major, forming a square; outside of this came a band of Pyrethrum Golden Feather, the whole being edged with Echeveria secunda glauca, planted in a horizontal position so as to raise the bed some four or five inches from the grass. Another of those "hearth-rugs" had a ground work of the Alternanthera just named, with panels of Ageratum John Douglas, and Pyrethrum Golden Feather, the edge consisting of Echeveria secunda glauca, planted in a similar way to the previous bed. Another of these beds had the center filled with two small ovals of Kleinia repens surrounded with Coleus aurea, the remaining portion of the bed being filled in with Alternanthera paronychoides major and Echeveria secunda glauca. At a point of the grounds where two drives meet a triangular shaped bed planted as follows was very effective: Center Coleus aurea, next Achyranthus Herbstii, then band of Coleus Starlight, surrounded by Lobelia speciosa (var.) the whole edged with Sedum glaucum. Several beds were filled carpet fashion with different varieties of Coleus, the majority of which were very telling; but in my opinion the varieties which appeared to withstand the vicissitudes of the weather best were Starlight, Spotted Gem, and the old Verschaffeltii. There were a large number of other carpet-beds, but I fear it would prove a weariness to your readers to wade through a description of them, as it would merely be giving a list of the plants already named, planted in different patterns. Your readers must not imagine from what I have stated that flower-gardening at Glenville Park is altogether confined to carpet-bedding. By no means. I noticed some exceedingly fine masses of sub-tropical plants placed in suitable positions. A large circle filled with Castor-oil plants, yellow-flowered Canna, Arundo donax variegata, the curiously-marked Eulalia, and the whole edged with Anthericum repens vittatum variegatum was exceedingly effective. Large masses of the double and semi-double flowered geraniums lit up the scene with their bright glowing colors, one of the best being Dr. Kirkland (a purplish scarlet), and running along one side of the grounds was a broad and very brilliant ribbon-border, having a background of choice flowering shrubs and trees.

I feel how far short is this description towards doing anything like justice to the beauties of the flower-garden at Glenville Park, and would strongly advise all lovers of horticulture having an opportunity during the summer, or fall months, to pay a visit there and judge for themselves. I can guarantee them each and all a hearty welcome from Mr. Gooding, the presiding genius, whose enthusiasm is only equalled by his practical knowledge in all that pertains to the gardener's art.

THE DUTHIE PARK, ABERDEEN, SCOTLAND.

BY N. ROBERTSON, SUPT. GOVERNMENT GROUNDS, OTTAWA.

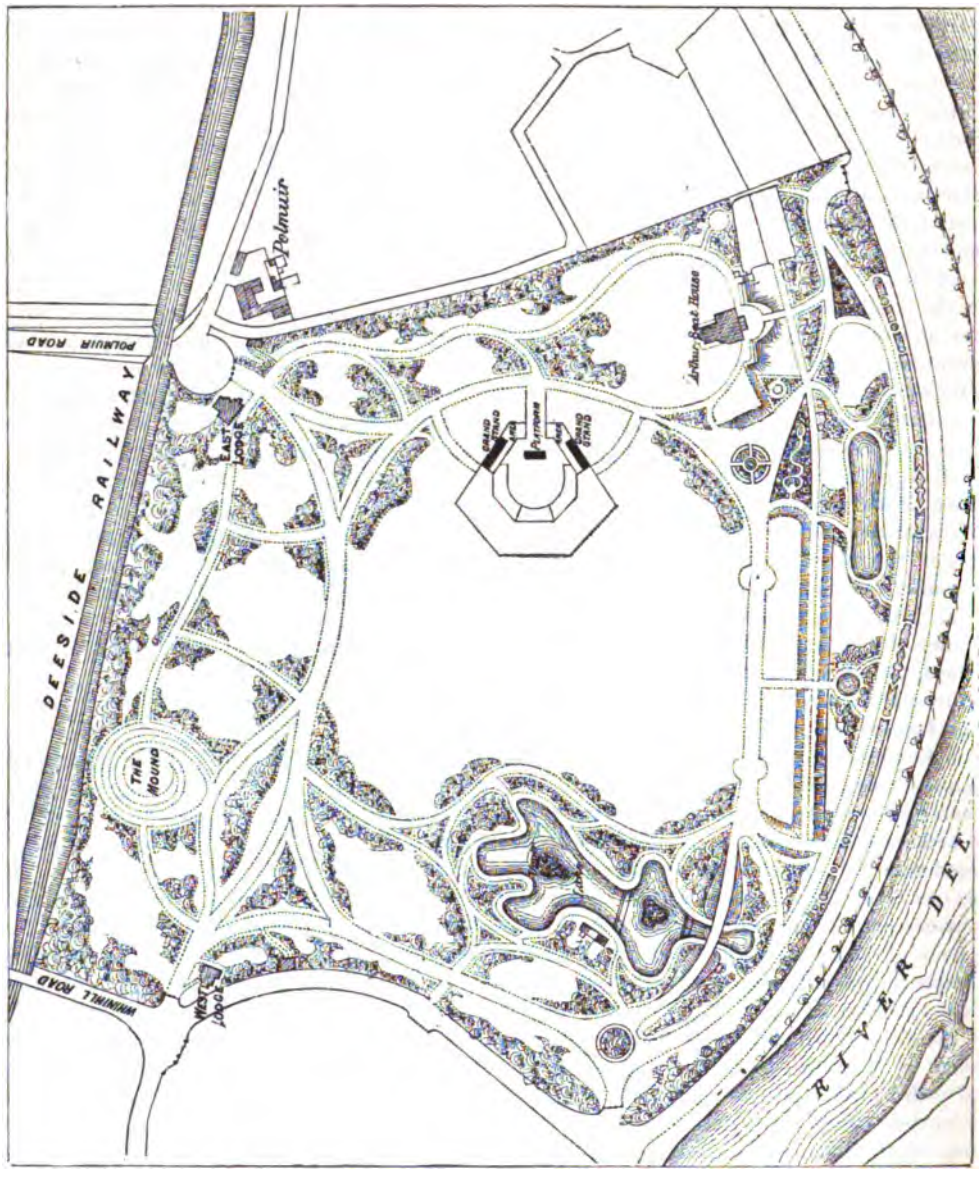
I send you an extract from the *Evening Gazette*, Aberdeen, Scotland, my native city, about the opening of a public park presented to that city by Miss Duthie, which it would be needless to say anything more in conveying some idea of so grand a gift for the benefit of that city, than to state it cost fifty thousand pounds sterling. Never could any people have shown more gratitude to her than on the day the key was handed to them of a place of amusement and recreation complete with its lawns, walks, trees, shrubs and flowers. Well might she think it was happier to give than to receive, as cheer after cheer went up from that immense throng as she presented herself in the park to deliver the key to them. There was a cessation from all labor. The rich and the poor mingled in praise of so noble a lady. The streets seemed to excel each other with the grandeur of their decorations.

The opening ceremony was performed by the Princess Beatrice with the following words:

"It is with great pleasure I come here in the name of the Queen, my Mother, to declare this beautiful park open, the key of which I now hand to the Lord Provost. I am convinced that Miss Duthie's very generous gift will greatly conduce to the health of her fellow citizens."

practical gardeners who gathered to the number of two hundred and fifty. Their part will be more interesting to readers of your MONTHLY, and is worthy of detail.

The procession to the opening of the park was headed by a magnificent floral design made and



The Duthie Park, Aberdeen, Scotland.

To detail the park would no doubt be very interesting, but I send a plan which has been kindly sent me. The cost of the gift will give some idea of its grandeur. What I want more especially to show is the part which was taken in it by the

fitted on to a lorry (low wagon) drawn by six powerful horses. The frame was twelve feet high. When the decorations were complete it stood fifteen. The frame was designed with arches and festoons ending at the apex in a coronet. On each

side of the frame at the base was the word "welcome," worked in floral letters. The arches of the frame were of iron rods which at each end form two diamonds. The whole of the arch was of flowers composed of Dahlias, Calceolarias, Hollyhocks, and other hardy flowers, many thousands in number, and weighing many hundredweights, filled in with evergreens. Round the bottom of the frame were placed a number of decorative plants in pots. The coronet was formed of Dahlias and bright colored flowers. Within the frame work was a miniature tree, covered with rosy cheeked apples, representing Adam and Eve in their primitive dress of leaves in the act of pulling the forbidden fruit. There were two serpents entwined around the stem of the tree, which gave it a very realistic appearance. The whole formed an ideal "grotto" alike perfect in its execution and design.

It was gotten up under the auspicies of the gardeners of the city, the work being superintended by a committee chosen from their numbers. The work was much forwarded by the assistance of the nobles and gentlemen of the county who, in addition to sending quantities of flowers, also sent them their gardeners and assistants to help with their construction. Numerous emblems of the craft were also carried in the procession.

Miss Duthie, not satisfied that she had done enough, made a further offer of certain lands in the vicinity of the park, from which rents were derived by her. These rents to be appropriated for the maintenance of the park and that only. But the council of the city seemed to think that after such a munificent donation it would be wrong to entertain such an offer, as the citizens would be dissatisfied with any further encroachment on her generosity, and they insisted on maintaining it themselves.

On the 19th September the town council unanimously placed on record in their minutes an expression of their thanks to Miss Duthie, and of the feelings of the general community in this respect. An excerpt of this minute, written in a magnificently illuminated album, enclosed in a splendidly carved casket, was presented to her at her residence by a deputation of the council headed by the Lord Provost. The citizens may well say with a motto carried in the procession: "As long as the water runs in the Dee, Miss Duthie will be remembered." (Dee, a river passing in front of the park.)

[The formation of public gardens and parks near the large cities of the United States, is just now attracting considerable attention, and it seemed to us it might serve an useful purpose in this connection to give with this a sketch of the beautiful park Mr. Robertson refers to.—Ed. G. M.]

EDITORIAL NOTES.

HARDY AQUATICS.—The grand show made at Fairmount Park and particularly the exquisite display made by E. D. Sturtevant at Horticultural Hall at the meeting in September, have shown people how much pleasure these beautiful plants can give. Mr. Sturtevant had the famous Victoria regia both in leaf and flower, giving pleasure by the sight of its huge and wonderfully constructed leaves, and by the delicious fragrance the flower cast around. Then there was the pink Lotus of the Egyptians, with its parasol-like leaves pushing up above the water, as if in rivalry of the handsome flowers. Pond lilies or Nymphæas, scarlet, red, white and blue from different sections of the world were blooming together, and the Water Soldier, a sort of marine in the grand army of flora, contributed its share of interest to hundreds of observers. Many of these plants are tropical, and could not be raised wholly in the open air, but those who have greenhouses can advance them a little in tubs of water, and in this way have them forward enough to set out in May and get the bloom during the end of summer.

CITY FORESTER IN BOSTON.—We do not know why Boston should be ashamed of the term gardener, but then even in ancient Athens, the people delighted to run after some new thing. However, in modern Athens the city gardener is called the "City Forester," a position filled very acceptably by Mr. Wm. Doogue during the past six years. The flower gardening is described by a Boston paper before us as absolutely superb. For the care of the city gardens and parks, Boston appropriated last year $60,000. Only first-class laborers are employed, the poor tools being cast aside after a short trial, and the best get $2 per day. The abilities of Mr. Doogue are highly spoken of by the Boston paper.

NEW OR RARE PLANTS.

ÆSCULUS SINENSIS, BUNGE.—M. Lavallée recently showed specimens of this tree before the Central Horticultural Society of France, from China and from Japan. The tree is hardier than the common Horse Chestnut, and begins to unfold

its buds about a month later. The young leaves have a rusty-brown color.—*Gardeners' Chronicle.*

ALTERNANTHERA AUREA NANA.—The golden alternanthera is an indispensable plant in modern carpet-bedding. Messrs. Wood, Beach & Co., of New Brighton, Pa. send us specimens of one they claim to be dwarfer than the common kind, and in this event would be very much more desirable.

A VARIEGATED AUSTRIAN PINE.—M. Carriere notes the appearance in French nurseries of an Austrian Pine with ivory white, and green leaves, and thinks it will be an indispensable ornament in every large garden.

HOVENIA DULCIS.—Though with a Linden-like leaf, and vigorous habit of growth, this is of the Buckthorn or Rhamnaceous family. It comes from Japan, and proves perfectly hardy. Mr. Brackenridge says of it:

"Rare, beautiful, hardy, useful and ornamental tree, which is about as hardy as the European Linden, and has a habit very much resembling it. Some of our trees are 30 feet high, and have a spread of about 20 feet. These have bloomed and borne fruit with us for several years: the peduncles of the fruit are edible, and of a pleasant taste, resembling that of a ripe pear. The flowers are borne on branching panicles, and make their appearance about the first of June, and afford a supply of honey for swarms of bees for a period of two to three weeks. Our original plant was brought from Japan by Thomas Hogg, Esq., of New York, to whom the country owes a debt of gratitude for this and many other fine plants and trees he has been the means of introducing."

SCRAPS AND QUERIES.

PROPAGATION OF CLEMATIS.—"M. S. B.," Portland, Oregon. A great many clematises seed very freely, and are then easily propagated. The seeds are sown as soon as ripe, if one has a greenhouse or cool pit, using a shallow box or pan for sowing the seed. The young plants come up before spring, and may be put into small pots, and in May planted in the open ground, placing leaves, corn-stalks or some litter over them in fall to keep them from being drawn out by frost. Sometimes the seeds are saved in paper bags till spring and then sown in the open ground, but in such cases some, and sometimes all, the seeds will remain in the ground a year before they grow.

Some kinds do not produce seeds freely. These have to be raised by layers or by grafting. Layering is a certain and sure way of raising the plants where no great numbers are desired. About mid-summer, when the branch is half mature, a slit half through the stem is made with a pen-knife, and this slit portion bent down into very rich soil. Roots will come out from the slit part, and the branch will generally be well enough rooted to make a good new plant by autumn. To increase in large numbers every joint can be used as a graft if desired. These sections are best taken when half ripe, and spliced by whip, cleft, or any form of grafting on to a piece of root of any kind that can be easily obtained, and the grafted root then kept in a frame or under a glass for a week or two to check evaporation till the union has been accomplished. By one or another of these three modes all clematises are raised.—Ed. G. M.

HOLLIES AND THEIR BERRIES.—"S. M. C.," Olney, Ill., writes: "Growing on my lawn are three American Hollies, one of which is fifteen feet high, also half a dozen Ilex verticillata; all of which bloom annually, the blossoms drop, and no berries are produced. I have also a large bush of Rosa rugosa that blooms well, followed by green tips, which soon drop, not one of which has ever come to maturity. Can you suggest the cause? I am much pleased with the "Hibiscus coccineus," which I got some years ago of Woolson & Co. It is hardy here, the thermometer last winter falling to 15° below zero. It begins to bloom the first of August and continues until frost."

[The American Holly varies very much in its sexual characteristics. Some are wholly male, and others wholly female. Isolated plants of these bear no berries. There are others which have hermaphrodite flowers, but even these seem to have the anthers more highly developed in some flowers, and the pistil more highly developed in others; the flowers can therefore be scarcely regarded as truly hermaphrodite. The perfection of these flowers varies in different plants, and hence there are some plants which never have more than a few berries scattered over them, while others are always profusely adorned with berries. Most purchasers take plants young, and hence it is chance whether they get a prolific plant or not.

The deciduous Holly, Ilex or Prinos verticillatus, so far as our observation goes, is always dioecious, and those who desire to have the benefit of its lovely berries should take care to get a staminate plant with the pistillate ones.—Ed. G. M.]

GREENHOUSE AND HOUSE GARDENING.

SEASONABLE HINTS.

Some time since a good lady, fond of plants, and a good gardener besides, called the writer into her very successful little greenhouse, and somewhat in this wise did she lecture him: "I don't know that you have so written it, but all the books I get hold of tell me never to keep saucers of water standing under the pots—now what do you think of these plants?" They certainly were charming specimens of robust health, rivaling the lady herself in this respect—and the writer received a smiling acknowledgment of the compliment offered. "Now, you see, I keep a saucer under each pot, and I always have water in the saucer. In the winter when I want the plants to look fresh and green, I put a little guano, or some other rich food in the saucers, and sometimes I put water quite hot. And yet you—pardon me—your writing class positively condemn the practice." And when we come to think of it, why should we condemn saucers under pot plants, and water in the saucers? As the lady says, authors do condemn the practice, but, after all, why? A plant with all its roots in water will not thrive unless it is an aquatic plant. Hence water must run rapidly away from the upper portion of the roots. What is called the drainage is to accomplish this, and so long as the water runs rapidly through the earth into the saucer, it is all good culture requires.

Plant growers have much trouble from insects, the little diminutive red spider especially, the work of which is often not known until the injury is done. It can readily be detected by a small pocket lens, which every plant grower ought to have. For a few plants in a window an occasional sponging of the leaves with water in which a little tobacco has been decocted is about the best thing. In a plant cabinet, tobacco dust—snuff—scattered over damp leaves is very good, but it does not reach the under surface of leaves. Water heated to 130° is very effectual, and an occasional syringing at this temperature will keep down all insects, and is much preferable to the filthy smoke and horrible compounds so often recommended.

COMMUNICATIONS.

WINDOW GARDENING.

BY JOHN THORPE.

The requirements for the successful management of window plants are neither numerous nor difficult; yet, as a rule, more disappointments and failures result than in any other branch of amateur gardening. One of the first requirements is a genuine love for plants, without which the many necessary little attentions are sure to be omitted, and the plants will suffer accordingly. It may be stated as a guiding rule that the greater the care, the greater the success and satisfaction.

The majority of plants require all the light it is possible to give them, with as much sunshine as the position and structure of the window will admit. As a rule those plants exposed to the morning sunshine thrive better than those having exposure to the afternoon beams only—this applies particularly to flowering plants.

Those plants grown for the beauty of their leaves and elegance of foliage, as, for example, palms, ferns and begonias, will thrive in windows which either are not exposed at all to direct sunshine, or for only a short time each day. But the light should be admitted directly to the windows, and not shaded by overhanging roofs.

Plants require nutritious soil. The best general soil is turf from a rich pasture, cut about two and a half inches thick, laid closely together until it has somewhat decayed, then broken up and mixed with about one-third very rotten manure or leaf soil. The leaf soil can generally be found in flaky-like forms beneath oak, chestnut, or other large trees, where standing thickly together. Where such soil cannot be obtained, a good substitute is easily found in the rich soil easily obtained from hedge banks, and in corners of most fields by the sides of the fence. Those living in cities can always obtain suitable soil from the local florist.

The watering of plants is of the greatest importance, and this must be done rightly. Nine-tenths of the failures in window gardening can be attributed to improper watering, either too much or

too little—in many cases too much. You cannot water any plant by rule of thumb. We frequently hear, "I cannot think how it is my window plants do not do well, for I water them every day." This is likely to be the cause of their not doing well. Whenever you water a plant, always give sufficient to soak the whole mass of soil thoroughly; then do not water it again until it shows signs of dryness on the surface. It may not be for two or three days, or even longer, but no matter, do not water it until you are sure of its being in a slightly dry condition. On the other hand, some plants require water twice a day, especially when the pots are full of roots, and the plant is growing vigorously and flowering profusely. The leaves of plants must be kept clean and free from dust; those with bright, shining leaves and of good size can be wiped clean with a sponge or other soft article. Others with smaller leaves can only be cleaned by being showered overhead either with a sprinkler or syringe, and it should be done once or twice a week. Do not allow plants to stand in water except such as are aquatic. If the water touches the bottom of the pots, a good plan is to have a smaller saucer turned upside down for the plant to stand upon within the other saucer, or even small blocks of hard wood or any other material that will hold the bottom of the pot above the water-line, otherwise remember to empty out the water that drains into the saucers. Plants delight in good living, and when the pots become crowded with roots they should be stimulated, but not until then, unless the plant has been a long time in the same pot, and it is impossible to renew the soil or give a larger pot. I am particular in calling attention to this matter of stimulating window plants, from the fact that a theory is now being extensively circulated, to the effect that plants grown in pots do not require any stimulants, or at the most very few. My experience is that you can no more grow a plant successfully in a pot, in poor or worn-out soil, than you can take a crop of corn or any other crop from the same soil ten years in succession without enriching.

For stimulants, one ounce of Peruvian guano in proportion to three gallons of water. Soapsuds, as used on wash-days, or water with ammonia in that has been used for washing hands, are all good; or the top of the soil in each pot can be removed to the depth of from one-half to one inch, a sprinkling of fine bone meal (which can be had at all florists' supply stores) applied, and then covered up with fresh soil. Besides there are a good many preparations of concentrated manures that are good and easily applied. Plants in warm rooms should be watered with water as warm as the temperature of the room, or a little warmer.

Insect pests are a great annoyance, and often cause considerable trouble from the fact that they do harm before being discovered. It is quite safe to subject all plants to an occasional bath of tobacco water, in strength about the color of strong tea or weak coffee, which can be easily made from the refuse stems from cigar makers or a small package of the common smoking tobacco, by placing in a pail and pouring over it boiling water, allowing it to stand all night, and then immersing the head of the plant entirely, and holding it so for a few seconds. This will destroy the green fly or aphis, and the minute red spider; other insects, such as the white, cotton-like mealy bug, must be picked off with a sharp-pointed stick, and the very tight-sticking scale-like insects will have to be removed in the same way. In immersing plants, with one hand press tightly on the top of the pot and turn it upside down before holding it over the vessel; this will allow all loose soil to escape and thus keep the liquid clean.

All plants should have either new pots or old pots washed perfectly clean inside and out. Broken pieces of pots must be used for drainage by first placing one of good size, with the hollow side downward, over the hole, then filling in with other pieces to about one-third of the depth; over this place a little rough soil, then place in the plant, fill in compactly all around, press tightly so as to have the soil within half an inch of the top in pots of small size, and in larger pots allow an inch below for water room, and all plants newly potted should be well soaked so as to be sure the whole is saturated.

I have not named any particular time to pot or re-pot plants, but it is desirable to change the soil at least once a year, and in cases where the pots are already large enough, there is no difficulty in washing away the old soil so as to use the same sized pots again; where plants are potted but once a year, the end of February or beginning of March is the best time; but as plants fill the pots with roots they can be moved into pots a size or two larger at any time.

To obtain the best results we must divide our collection into two sections—the first section to embrace such as will do well in rooms where the temperature exceeds 65° Fahrenheit, and the second section where the temperature does not exceed 65° nor fall lower than 40°. This must be understood to mean where the heat is artificial, and not

sun heat; and we may say a slight variation for a few hours at a time will not be injurious, should the temperature rise or fall.

First on our list are begonias. These embrace several distinct characteristics. The shrubby flowering species, generally with bright, clean leaves, give general satisfaction, and if properly watered and placed where they can have a little sun, flower persistently the whole of the winter; such as Saundersoni, Hybrida multiflora, Weltoniensis, Semperflorens, the brilliant Rubra and Insignis should be included in a limited collection. These do not include nearly all of this section, but are easily managed. Another class of begonias are the Rex type, with beautiful marked leaves of all shades of green and silvery-white. These require a rather shady position and a moist atmosphere; in fact, they must have a good degree of moisture atmospherically or they are unsatisfactory. They are impatient if subjected to too much water at the roots, or too much dust.

Caladiums, with many-colored, spotted, striped and mottled leaves, are very handsome plants for summer, and can be started in small pots in March in the warmest corner, re-potted as they grow into pots of four or five inches in diameter, and by the time other plants have to be removed out of doors these will be fine objects all summer.

Coleus and Achyranthus are splendid plants for very warm rooms. Strong tops can be easily rooted from plants growing outside, by the middle of August, taken inside before any chilly nights come, re-potted into necessary sized pots, and kept well supplied with water. They are among the best plants for winter, and are not at all costly.

Crotons have not as yet been employed for window plants to the extent they deserve. Their richly-marked leaves, elegant forms and variable shapes are always attractive. They delight in rich soil, a high temperature and moderate light: should be frequently cleansed, either by sprinkling, bathing or sponging; they may either be kept inside all summer, or after the 1st of June they may be plunged in some shady, warm corner outside, until September. Any straggling shoots should be pinched or cut off from time to time, thus producing a bushy growth. The varieties Interruptum, Irregulare, Variegatum and Pictum are among the cheapest and best.

Dracænas are well-known elegant plants, easily managed. The varieties Terminalis, Guilfoylei, Cooperi and Amabilis are grown in great numbers for window plants, and if they are treated as advised for crotons they will give the same satisfactory results.

Ferns are numerous, succeeding in the shadiest windows, requiring but little attention, and always graceful and cheering. They must be kept well supplied with water, occasionally bathed or syringed; in the summer time plunged out of doors in some shady, damp spot, and in September, before bringing in again, should be re-potted; this is about all the cultivation required. A few beautiful varieties are Adiantums cuneatum, Farleyense, gracillimum and trapeziforme, Davallia tenuifolia, Lomaria gibba, Microlepia hirta cristata, Nephrolepsis davallioides furcans and Pteris Cretica albo lineata, not forgetting a few varieties of Selaginellas or Lycopodiums.

The Ficus elastica or India-rubber tree is well known, and might almost be called the indestructible plant. With its bold and leathery leaves, its free and noble carriage, it bids defiance to dust and smoke alike, providing always it has plenty to drink, with occasional stimulants added.

Palms are the aristocracy among foliage plants, mostly very easy to manage, requiring a good deal of water and not necessarily very large pots; thriving well in a partially shaded window, to be frequently washed overhead, and can always be placed outside under partial shade in summer time. A few fine kinds are Areca lutescens, Caryota urens, Cocos Weddelliana, Latania borbonica, and Oreodoxa regia. They can be used for various purposes of table decoration, and not necessarily taken out of doors if desirable for windows in the summer.

In our second section we have a more extended list of flowering plants, and not so large a list of fine foliage plants. Beginning with abutilons (often called flowering maples), we have a class of elegant free-flowering winter-blooming plants, embracing pure white, yellow, orange and deep red flowers; thriving in a partially shaded window, adapting themselves to any mode of training, plunged out of doors in the summer time, re-potted in August. They can be trimmed into either standard or any other form, and will flower continuously.

Azaleas are very beautiful, easily managed, but rather impatient if subjected to a dry atmosphere or allowed to get dry; in fact, they should never be allowed to get dry at the roots, either winter or summer. A frequent bath, immersing plant and pot, is a safeguard against drought and otherwise beneficial. A partially shaded window and a shady spot in the summer will give them about

all they require. As to varieties, there are no poor ones, and most florists have a good selection. This brings us to another very popular flower, the camellia; one of the very easiest plants to manage, but unfortunately it is generally a rather unsatisfactory window-plant, from the fact of its being so very conservative. It does not show any abuse at the moment of affliction, and not even for months, but tries to forget and start afresh, with better hopes; but alas! it breaks down, and its apparent fine, large buds drop off, one by one, until none are left. This, in nine cases out of ten, is from the plant being allowed to suffer for want of water in the summer time. Those curious enough to open one of the fallen buds will find generally the outside of the flower quite fresh, but the center is always discolored and dead, and has been for months. With well-drained pots it is almost impossible to give camellias too much water in the summer time; and the same treatment and position as advised for azaleas will exactly suit camellias. As to the beauty of the camellia, every lover of flowers is aware of it. They are rapidly gaining favor again, and will shortly recover their once great popularity; and as there are no poor varieties, it is quite easy to make a selection.

Calla lily (Richardia Ethiopica) is another very popular window-plant, and yet not very generally successfully managed. Those having plants at this moment will do well to keep them growing in a light, sunny window; if they have not flowered, do not lose patience and set them in the background; bear with them until the first of May; then find some shaded, damp corner in the garden: in this plunge your plant over the rim of the pot; about twice a week during the summer carry along with you a basin or watering-can of soapy water, and give your calla. Toward the middle of September dig it up, and if the pot appears too small for the plant, get a pot one or two sizes larger; turn it out, and place in the larger pot without breaking the roots; then stand it in the lightest sunny window. As it begins to grow, give plenty of water, and often some stimulants, and by Christmas, if these directions are followed, you are sure to have flowers. After the flower-buds are in sight, you can place the plant in a very warm position without injury.

Carnations are always favorites, and should be very satisfactory plants; they can always be had established in pots in the fall. They delight in a rich soil, a rather low temperature, and plenty of sun. Those desiring to grow their own plants should plant small ones in the open ground in May, in a sunny position, occasionally cutting off the tops of the plants, to make them bushy, until the end of July, after which they should be allowed to grow. At the beginning of September dig up carefully with ball of earth, and place in pots well drained; put in shady place, and after beginning to grow, and before frost, remove into the house. A few of the beautiful chrysanthemums should be planted at the same time as the carnations, and subjected to precisely the same treatment, or a few can be plunged in pots and watered as often as required. Those who have a window should have some of this the most beautiful of autumn flowers.

Daphne Indica, two varieties, are most easily managed, and perhaps are the most deliciously perfumed winter-flowering plant we have, requiring about the same treatment as azaleas.

Fuchsias can be made to flower quite early in the spring, and the speciosa and one or two other kinds are good winter-flowering varieties. Fuchsias require good drainage, a light, porous soil, a somewhat sunny position in winter, slight shade in summer, and a rather moist atmosphere. Geraniums (these are really pelargoniums, but we seem to have got so used to the name geranium it is a hard matter to believe any other) are for a light, sunny window, where the temperature can be kept about 55° to 60°: the best of all winter-flowering plants, and all growers should have among their collection both double and single varieties, especially some of the finer forms of the single kinds. They are so easily managed and so continuously in flower, it would seem there ought to be no dearth of flowers where there are half a dozen kinds of geraniums. There is often a great mistake among window gardeners, expecting to have their windows gay all winter and their flower-gardens gay all summer with the same plants, and repeat. This cannot be done; those plants intended for winter-flowering should be nicely rooted plants in May, then potted into small pots and plunged in the open ground, the flowers to be kept picked off all summer. About the middle of August they must be potted into good soil in well-drained pots of four or five inches in diameter, placed in some spot where they will have a little sun morning or evening, but not plunged as before. After the middle of September take them inside, in the sunniest window you have, water well, and carefully turn the plants around from time to time, to keep them in good shape, and as the pots get full of roots, give a little stimulants at least once a week, and there will be

no dearth of geranium flowers. If old plants are kept over, they should not be allowed to flower during the summer, but treated as advised for young plants. Those desirous of a few more ferns for a cool room should add to the list given (on page 361, this article,) Cyrtomium Fortunei, Lastræa aristata variegata, Nephrolepis tuberosa, Pteris argyriea and tremula. Other palms could be added also for growing in a cold window, as Areca rubra, the three Chamærops, excelsa, Fortunei and humilis; Corypha australis and Seaforthia elegans. Of miscellaneous window-plants are Chinese primulas, cyclamens and cinerarias, easily obtained from florists in the fall, and requiring about the same treatment as advised for the management of the geraniums after being brought into the house. In this article I have not exhausted half the window plants available.

There are a few other plants which should be included in our list, such as climbers. The European ivy, the German ivy, the Senecio macroglossus, Lygodium scandens and Smilax. And for basket and bracket plants the Kenilworth ivy, Othonna crassifolia, the different Tradescantias, and several other kinds that will present themselves to the enthusiastic window gardener.

The disposition and training of the various plants can be left to the cultivator, but it is best to bear in mind always to consult the general habit of the plant, and not to force it into shape and position that prevents healthy growth and development.

As with the training so with the grouping or arrangement of plants in baskets, stands or jardinieres, it can be left to individual taste. Where it is not desirable to disturb plants by re-potting, they can be placed inside larger pots and the interstices filled up with either moss or fine soil. On all favorable opportunities air should be admitted for a few minutes or longer each day; but as window-plants are not expected to have all their requirements as if grown in a structure expressly for that purpose, we must do the best we can under the circumstances.

In this essay, which has spread over considerable space, there is no mention of bulbous plants, as a paper recently read before your Society gave instructions for their management in the house.

[This excellent essay was read before the New York Horticultural Society, at one of its spring meetings. It is one of those admirable productions, which, though long, could not be condensed without losing something.—Ed. G. M.]

EDITORIAL NOTES.

PARLOR IVY.—Few plants have proved more universally popular than the parlor ivy, Senecio scandens. Its name, by priority, is, however, Senecio deltoides, and under this name it is being introduced in Europe. We mention it that those who import "new" plants may know what they are buying.

BRIDAL APPLE BLOSSOMS.—The *Public Ledger*, of Philadelphia, says: "Brides are not restricted to orange blossoms; they may carry any sort of sweet-scented white blossoms. Presently we shall have some florists forcing the fruit boughs to furnish bridal bouquets. Apples and pears, plums and peaches make the most exquisite decorations for the wedding day."

DYEING FRESH FLOWERS.—A London paper tells us that a bouquet recently carried by the Princess of Wales was remarkable. It was composed entirely of large lilies, tinted with the most delicate blue and pink hues by the absorption of dyes through the stems. By this process, which was discovered by Mr. Nesbit, the well-known analyst, while experimenting on the anatomy of flowers, very beautiful results can be obtained without in any way affecting the perfume or freshness. Singular to say, flowers refuse to absorb certain colors, while they dispose of others in different manners. If placed in a mixed solution they make a complete analysis, and some of the lilies which had been treated with purple showed distinet red veins and blue veins, the colors having been divided in the process of absorption.

NEW OR RARE PLANTS.

WHITE BON SILENE ROSE.—This is a sport from the old Bon Silene, possessing the same vigorous growth, the same free-flowering qualities, and as hardy in constitution as the parent. It originated with Mr. F. Morat, of Louisville, four years since, and has been grown by him since that time. The flowers are of pearly whiteness, and are a counterpart of the red Bon Silene.

SWANLEY WHITE VIOLET.—This is a sport, having originated in Italy from the very popular and well-known Marie Louise. Hallock, Son & Thorpe have grown this for nearly two years, and say that it is in every way equal to its parent, having the same growth, the same freedom of flowering, the same perfume, and the individual flowers are equally as large and of the purest white. This

will offer quite a new feature in the use of this very popular flower, as it can be used in all designs and decorations where the purple violet is objectionable, especially for use in wedding bouquets, for the hand, corsage or personal decoration. This must not be confounded with any white violet previously offered, as it is truly perpetual, whereas other kinds flower for a period of a few weeks only.

SCRAPS AND QUERIES.

YELLOW WINTER CARNATION.—"H. S." says: "I have sent to florists who offer yellow carnations several times, but get only dirty creamy colors. What is a good yellow?

[Of what is properly yellow, we know of none. Brimstone has scarcely been reached, much less pure yellow.—Ed. G. M.]

ZONALE GERANIUM—LITTLE GEM.—This is a seedling of Mr. W. A. Bock, and proves to be a remarkably free-blooming variety when in the open ground during summer time.

A DESTRUCTIVE GRUB.—E. Walker, New Albany, Ind., contributes the following interesting note: "The past season I have noticed thrifty plants among our stock geraniums and verbenas in the open ground suddenly appear to become diseased, and quite a number wither and die without any visible cause. But this fall, on digging up some of the geraniums I found a white grub at the root of every sickly plant, and the stem of some almost, and of others completely cut in two about an inch and a half below the surface of the soil. I have since been informed by a former head-gardener of Floral Park, of Louisville, that geraniums never did well on those grounds, on account of this grub."

FRUIT AND VEGETABLE GARDENING.

SEASONABLE HINTS.

For those who have time to do it, nothing pays better than an annual washing of the stems of fruit trees. It helps to keep the tree clear of dead bark, and that is an advantage in itself, and then it keeps away the shelter for insect eggs, and the spores of injurious funguses. The old-fashioned lime-wash with sulphur, and some soot or clay to keep down the glare of the lime, is very good, but if even this covering be objected to, there is soft soap, potash, or any of the numerous articles which have been found to be not injurious to the tree itself. The mere wash is a benefit. Surface manuring is also a benefit, and even here the exact material is not such a very momentous question. The leafy vegetable matter, with the sand of roadside clearings, has been found to be very beneficial. We have rarely seen a tree suffer from too rich feeding when that food was applied to the surface.

The pruning of fruit trees should have prompt attention. Apple or pear seldom need more than a thinning out of the weaker branches, except when the growth is weak from insect attacks, over-bearing, or poverty, or bad management. Shortening in, so as to get a new, vigorous growth, will then be a benefit. Just how much pruning should be done, cannot be told outside of the orchard to be pruned. In the old times, we had pictures and written sketches of just how to prune a tree, which no one could follow, because no two orchards will bear just the same treatment. The grape can be brought nearer a general rule—but, even here, little more can be said than that we do not want to retain weak shoots, and we do want the strong ones—we do not want the whole length of the cane which we preserve, but we shorten in proportion to its strength; we want always to keep our annual shoot as near the ground, or as near the main stem, as possible, and, therefore, in pruning, we study to so cut as to give the lowest ones all the encouragement we consistently can, keeping in view our desire to get a full crop of fruit the coming season.

Very little can be done now in the vegetable department, except by way of preparation for another year.

Manure can be placed on the ground whenever required, and asparagus beds, if not already done, should have a slight covering of it. Bean poles,

pea-brush, and stakes of all kinds should be got now, the tool-house gone over and put in order, and everything kept in good order and studiously in its place. When the season of operations commences, there will then be nothing to hold back the attention.

If there is abundance of leaves or manure at command, and small frames, beds may be put up for early spring salads, at the end of the month. Radishes and lettuces are, however, very impatient of too much heat; they will come on well if the temperature be kept at 45°. When it goes above that, the sashes should be lifted entirely off. The same remarks apply to the potato and the early horn carrot.

Cauliflowers in frames require all the air possible. Never allow them to become dry; this is the cause of many failures by way of "buttoning off."

COMMUNICATIONS.

CATERPILLARS ON GRAPE VINES.

BY T. BENNETT,
CHAMBERSBURG, NEAR TRENTON, N. J.

The article in the November number of your excellent monthly, headed "Grape Vines in City Yards," reminded me of something that may be of interest to many of your readers, namely, How to get rid of the grape vine caterpillar. This pest is very annoying, as it cuts whole bunches and parts of bunches, and lets them drop on the ground, without any apparent reason, for I never could see that it ate them. It is large and brown, and similar to the large green caterpillar that is sometimes found on the tomato vine. It does all the mischief, I believe, at night, and is seldom seen. Grape arbors are sometimes very high, and, therefore, it seems hard to come at it. The scientific name, I believe, is sphinx, which some great man gave him from a fancied resemblance to an old Egyptian monument of antiquity. But any name will do, so as it is generally understood. Let a person tie an old paint-brush on a long pole, long enough to reach about one foot above the arbor. Dip in coal tar, and go on painting the underside of the woodwork overhead. The smell starts the caterpillar immediately from its hiding place under the leaves. When the operator has advanced about three feet, let him jar the vine quickly (that is, its branches overhead) and the caterpillar immediately falls to the ground. The vine and leaves are to be touched as little as possible with the tar.

A GOOD SUMMER PEAR.

BY CHAS. E. PARNELL, QUEENS, L. I., N. Y.

I am often asked, which is the best early pear for amateur cultivation. I think the Doyenne d' Ete is. For a variety to succeed this, I would name Manning's Elizabeth, a variety which, in this vicinity, ripens about the middle of August, and which is one of the most beautiful of dessert pears. The tree is of stout, yet moderate, growth, and is remarkably productive, so much so that, in order to insure fine specimens, the fruit should be judiciously thinned when about half grown. In most cases it is advisable to remove at least one-half. The fruit is small, and of an obovate shape, with a smooth, yellowish skin, tinged on the sunny side with red, and a slight trace of russet. The flesh is white, very juicy, and has a sprightly sugary flavor. In order to have the fruit in its perfection, it should be gathered, and ripened in the house. It is of foreign origin, and was received by the late Robert Manning from Dr. Van Mons as No. 154. I am aware that all of our pomologists and fruit growers are well acquainted with this excellent pear, but I do not think that all of our amateur cultivators are, and it is for their benefit that I have called attention to it. I should have stated that it retains its glossy green foliage until late in the season, and, in pruning, it is best to permit the tree to retain its own habit of growth, merely removing all weak and superfluous wood. As this is a favorite pear of mine, I should like to hear how others have succeeded with it.

GRUBS IN CAULIFLOWER ROOTS.

BY W. D. STEWART, OSWEGO, N. Y.

I, perhaps, can throw a little light on the subject that "B.," of Colora, Md., writes about, and of which you say it is worthy of further investigation.

Last summer I was losing some fine cauliflower plants, that had been pricked out in the very same manner that "B.," of Colora, complains of. My vexation led me to take a few of the grubs that appeared to be mature (for I found them in all stages of growth, from very minute ones, that were white, soft, and wriggly, to those that had assumed a chrysalis form, and dark yellow in color) and imprisoned them under a glass inverted upon a clean white saucer; in about three days I had a common house-fly for every grub that I had confined under the glass. I have read repeatedly the theory of this insect being the larvæ of the flea beetle, also other theories. Through my investi-

gation, I hold the idea that the common house-fly is the source of trouble, and in the same manner that meat gets fly-blown. I could write more regarding this, but it would be theories of my own, while the above are facts.

EDITORIAL NOTES.

A PROFITABLE PEACH IN NEW YORK.—A correspondent of *Am. Rural Home* says that the early Crawford has been found the most profitable peach at Ridgway, in that State.

KIEFFER PEARS.—We found what some Boston friends are calling "a miserable, worthless, old variety, under the new name of Kieffer," selling readily in the Philadelphia markets, recently, at $4 per basket. If the variety should even be found "old," surely the prices are new, and our simple-minded forefathers must have been very slow to lose so good a chance of giving the market-goers something which they seem to want, at very profitable prices.

SOUHEGAN RASPBERRY.—This is earlier than the Doolittle, and is a very good Black Cap. It has no gray bloom, as some have, and looks well to the eye.

SALADS.—It has been suggested that early lettuce should be very carefully washed before eating. It is often forced in frames and watered with liquid manure, which is liable to get in among the leaves and remain there, unless carefully looked after. Some curious physicians pretend that some cases of typhoid fever have been traced to this cause; but just how it was traced it would be well to know. By what we read of the opinions of physicians, it is a mystery that any member of the human race lives over a single day.

THE CURRANT BORER.—This pest of the cultivator of the Atlantic slope, the Ægeria tipuliformis, we found, on our recent trip to the Pacific, to be worrying the growers in that district also.

HALE'S EARLY PEACH.—This is regarded as the best of all the well-known early kinds for peach house culture in England. Besides its extra earliness, it is pronounced delicious.

BEST APPLES IN EASTERN PENNA.—No experience from any one cultivator will tell the best apples for any one locality. Each one tells only of that which he knows. Others may know more. Still, these individual opinions are often a fair guide. At a recent meeting of fruit growers, at Reading, the proceedings of which we have been favored with by Mr. Cyrus D. Fox, the following were named as their choice by different cultivators: Baldwin, York Imperial, Ben Davis, Wagner, Smith's Cider, Krauser, Fallawater, Rhode Island Greening, Keim, Smokehouse. Early Harvest and Red Astrachan were named as the best early sorts.

CAROLINA RASPBERRY.—This is the only white raspberry, of the American race, that seems worthy of culture. It is, of course, not so good as Brinkle's Orange, or other light-colored kinds, of the foreign breed; but it is a very good, hardy kind for an amateur's garden.

VALUE OF FRUIT FARMS IN WESTERN N. Y.—According to a correspondent of *American Rural Home*, a farm of 100 acres, in Orleans County, New York, was bought, by Mr. Packard, for $20,000. It had 50 acres of apple, 8 of peaches, 5 of quinces, and about 200 standard Bartlett pears.

THE NEW TUBEROUS-ROOTED GRAPE.—This singular species has fruited in Italy, and the *Bulletino dello, R. S. Di Orticultura*, gives a wood cut of the bunch and berry. The berries are nearly as large as the Clinton, and the bunch is formed as if made up of a large number of small clusters on shoulders. This is a native of Central Africa, and, therefore, we may expect it to thrive only in those parts of our country free from severe frosts. It was brought from New Caledonia to France by M. Lecard in 1881. The production is described as abundant, and the fruit as of good quality. It is herbaceous, that is, dies down to the ground annually, and has tubers like potatoes. In this case the roots ought to be preserved like potatoes, and its culture may be a success as far North as a sweet potato would grow. It is said to be similar to, but not quite like the Cochin China grape. Great hopes are entertained that in this grape the Europeans will find a way out of their fright under the visitation of phylloxera.

It may be well to remark that such a grape as is described here is not unknown in the United States, as there is a tuberous, herbaceous species, native to Texas and the Indian Territory, introduced into the Northern gardens by the writer of this in 1873. This is the Vitis incisa of botanists. The fruit is, however, small, and not even as large and grape-like as the common Ampelopsis, or Virginia creeper, which is closely allied to the true grape.

ALEXANDER PEACH.—We notice that this American variety is attracting attention in Italy.

NEW OR RARE FRUITS.

EARLY CLUSTER BLACKBERRY—Is one of the new introductions, which seems to have more than the usual number of intelligent endorsements.

WONDERFUL FRUITS.—We have before us a circular describing Fay's Prolific currant, and giving a drawing thereof. The bunch is given as six inches long, the berries which show on one side of the bunch are 23, and, to be merciful, we will suppose there are only four not visible on the back of the bunch—27 berries. Not one of these berries is less than an inch and a half in circumference. Most of them are two inches. To say the least, it is wonderful, and there are not many who ought to expect to see such a wonder.

A GOOD CALIFORNIAN PEAR.—A Chico correspondent says: "I send specimens of a promising seedling pear I discovered growing upon Rancho Chico this summer. It is evidently a seedling from Winter Nelis. The tree having the same irregular growth, though in a less degree. Although growing at a disadvantage by the roadside, some of the fruit is larger than any Winter Nelis on the ranch. It is also a little earlier in ripening. When fully ripe, I think it superior to Winter Nelis."

[This is more conical, or, rather, more tapering towards the stem than in the Eastern grown Winter Nelis; and the lower portion of the stem itself is of a thick, fleshy character, and tapers gradually, being almost fleshy to the apex. The skin is much more russety than Winter Nelis as we grow them; but we believe it is characteristic of the California-grown pears to be more russety than even the same variety is in the East. The quality is superior to the best Winter Nelis we have ever eaten from Eastern trees. Its exact value will, of course, depend on a comparison with Winter Nelis as grown in the same locality. All we can say is, that the flavor and general qualities give it, as eaten here, a very delicious character seldom experienced in even our very best varieties.—Ed. G. M.]

A NEW PLUM.—The *Gardeners' Chronicle* says: "Prunus Pissardi is certainly one of the most remarkably hardy shrubs in cultivation. We know of none which can in any way vie with it in the splendor of its intense red foliage. The fruits, too, even in a young state, are also a deep red color—a character which perhaps does not obtain in any other plum. The species is still rare in gardens—indeed, the only locality where we have seen it in this country is the Waltham Cross nurseries of Messrs. W. Paul & Son—but its rare ornamental character is sure to make it a general favorite before long. A colored plate of the foliage and a full description of the plant, together with the history of its introduction, is given in the *Revue Horticole* for 1881. The specific name was given by M. Carrière, in honor of M. Pissard (head gardener to the Shah of Persia), who sent the plant to France. It is found about Tauris, an important Persian town about 450 kilometres from Teheran, where it is still rare and much sought after on account of the bright coloring of the leaves, and particularly of the fruits, which are deep red even as soon as formed. Before being ripe these are used for the decoration of desserts, and are also eaten with salt; when quite ripe they are of fairly good quality. M. Carrière recommends that the plant should be used for enlivening beds or borders near dwellings, as its leaves, flowers, fruit, as well as the deep blackish-red shining bark, constitute a perpetual ornament. Its dwarf branching habit renders it a fit subject to be grown in pots, like spiræas and other similar shrubs."

SCRAPS AND QUERIES.

OVER-BEARING KIEFFER PEARS.—Mr. William Parry writes: "I saw in the GARDENERS' MONTHLY a notice that, 'At the recent exhibition in Philadelphia, two, three and four year old trees were exhibited, on which had grown nearly a half bushel of fruit. Nine out of every ten pears should have been taken off in infancy. Then the fruit would have been delicious.' As the trees referred to were dug from nursery rows and exhibited by me, I take this occasion to state that there were others in the same rows which matured as many as seventy-five large, handsome pears, a few specimens of which I submit for testing, judgment and report. I think the Kieffer is proving to be a great success—fully sustaining all that has been said in its favor and disproving what has been said against it. Hundreds of bushels are being sent to market this fall, and sell readily at 50 to 75 cents per half peck, and as high as $5.00 per bushel in larger quantities."

[These specimens fully confirm the remark we made. They were very good, jucy, wholesome-eating pears, fully as good as the great majority of kinds which have first-class certificates, and we will repeat, that if these trees had their over-plus

thinned in infancy, as all good cultivators do who desire fruit of extra quality, there is every reason to believe that they would have been excellent. That trees over-loaded as these were should produce such large, showy and very good fruit as these are, is quite sufficient to stamp the variety as one of the very best.—Ed. G. M.]

THE BEST PEAR AND APPLE.—"F.," Washington, Pa., writes: "I am an amateur with a small garden, and want a few fruit trees to plant to get fruit to eat and not to sell. I don't care for enormous bearers, merely. I want, say, half a dozen apples and half a dozen pears, and I only care for one kind each. What would you recommend a new subscriber to plant?"

[The Seckel pear and the Smokehouse apple.—Ed. G. M.]

FORCING TOMATOES.—"J. S. F.," Wilmington, Delaware, writes: "Would you please write an article in your GARDENERS' MONTHLY on the culture of tomatoes in this latitude, under glass in winter season. There does not seem to be any treatise on that subject."

[Tomatoes are not forced to any great extent in this part of the world. So far as we know, Mr. John Paget, gardener to Senator Cameron, is the only one who makes a point to do so. Yet it is remarkable that more do not enjoy this luxury; for those raised by Mr. Paget, and which come in soon after Christmas, are, to our mind, desirable, not only for the season when they mature, but for their delicious flavor, which is superior to those raised in their natural season in the open air.

As a matter of profit, it is not clear that it would be a success, with the experience of other forced fruits and vegetables before us. Hot-house grapes, for instance, in late winter and early spring, brought a dollar and a half a pound. Calculations based on these figures, made the business profitable, but when large houses and immense quantities were raised, it was found that nothing like these figures could be had. With half a dozen vines, one could take his crop in a hand basket, and get his dollar and a half, but when he had thousands of pounds, the services of others to sell had to be called in. Transportation charges, agencies, advertisements, commissions, middle men, and hosts of other expenses, bring the final dollar and a half down to seventy-five cents, at which it will not pay. Cucumber growing and similar other subjects of winter forcing have been tried—all profitable enough when one has but a few hundred dollars' worth to handle—but are losses when grown on a large scale.

If, however, one is disposed to try tomatoes, the great requisites are great heat and plenty of light. Without the latter the plants will not set their fruit well. We should imagine that a steep-angled double-pitch roof would be best for the purpose. The plants should be started towards the end of summer, so as to be pretty well advanced before being placed in the rich beds of soil under glass in September. A temperature of not less than 65° would be desirable.

If Mr. Paget could find time to give a few notes from his wonderfully successful experience, they would be read with great interest by numbers of our readers.—Ed. G. M.]

FORESTRY.

COMMUNICATIONS.

AMERICAN FORESTRY.

BY PROFESSOR J. T. ROTHROCK.

Abstract of Lecture at Fairmount Park, Philadelphia.

All things considered, the best timber the English Kingdom furnished was from the English oak. Its strength and durability had passed into proverb, and it had come to be regarded as synonymous with English naval dominion the world over, because from this oak were built the long-lived ships that upheld England's honor in all seas and in the face of all foes. Yet, as a matter of fact, fair, impartial trial had shown that the American white oak was equal in nearly all respects to the British, and in some qualities was better. Thus what very little strength it lacked in comparison with the English was more than compensated for by increased length of straight pieces.

Our timber has a special value, because there

are so many kinds which grow here and nowhere else. Our white pine and redwood, our hickories and black walnut, our enduring locust of the East and matchless sugar pine of the West were our own exclusive property, the special gift of our own goodly heritage. The same might be said of the tulip tree and the Osage orange. Beside the mere fact that we do possess such treasures, there should also rise the question: What use shall we make of them? Shall we recklessly exhaust or shall we husband such resources and make them the permanent handmaids to our civilization that less valuable kinds have been to that of Europe?

We have but little idea what quantities of lumber are used by comparatively small industries. Thus a recent report informs us that yearly we consume 100,000 cords of soft maple for shoe pegs; for lucifer matches, 390,000 cubic feet of pine go; while lasts, boot-trees and tool handles call for 1,000,000 cords of birch; making our bricks burns up 3,000,000 cords more. To string the telegraph wires of the country upon, three hundred thousand new poles are required annually.

Under the general designation of naval stores we have tar, turpentine, pitch and resin. These are powers in the land whose value was recognized along the Hudson as early as the first of the last century by the British naval officers stationed there. The value of these exports from our country in 1802–3 was $460,000. During the war of 1812 this sank as low as $31,000. Before our recent war the value of this class of exports was $1,203,537. During the war of 1864–5 it fell to $126,333. Immediately on the return of peace in 1865–66 it rose with a bound to $1,651,586. Of course most of these exports were from the Southern States. Such statistics show many things, and among their lessons is the one teaching us the terrible prostration of national energy which follows in the wake of a war. In 1878–9 the value of these naval stores exported was $2,260,586. From 1802 up to 1852 the average value of forest exports from this country has been about twice as great as that from the ocean.

To-day the hides from the pampas of South America and the prairies of Texas are made into leather by hemlock bark from the hillsides of Pennsylvania. We can hardly dignify collection of sumac leaves with the name of a forest industry, yet if we compare our own (home) collected leaves with the Sicilian, though the latter do contain more tannic acid, the comparison is very largely in our favor, because of the cheapness of preparing our own leaves.

In the United States we have about forty species of oak. If we were to draw a line of distinction between those of the Eastern slope and those of the Western slope, we might say the former were taller and straighter than those of the West.

Taking the whole group of oaks, we might regard them as nearly evenly divided into white and black oak species. General characteristics of these groups would be that the former (white) matured their acorns in one year, and produced good, compact wood; while the latter (black) usually required two years to mature their fruit, and had wood which was darker colored and much more porous. The chestnut tree is one which has many claims upon us—its value as a timber, its rapidity of growth, its tendency to sprout when once cut down, the uses to which the young sprouts can be put—all combine to mark this as one of our most valuable trees.

It may seem incredible, but Italy uses as food 6,400 tons of chestnuts a year. There almost as much attention is paid to the production of choice varieties of chestnuts as we pay here to the production of improved peaches and pears.

Among the trees introduced here is the so-called English walnut. This tree is now largely cultivated in California for its fruit, but it should be remembered that it has, in an exceptionably favorable location within what is now the city limits, produced fruit for many years. Of course it could not be counted upon here, but on the "Eastern Shore" of Maryland it might be regarded as a certain crop.

Passing by a great mass of important facts as this abstract must, the lecturer stated that the following States, so far as their lumbering product were concerned ranked, as among all those of the Union thus:

	Total value of forest products in 1880.
Michigan, 1	$52,449,928
Pennsylvania, 2	22,457,359
Wisconsin, 3	17,952,347
New York, 4	14,356,910
Oregon, 26	2,030,463
Washington, 31	1,734,742

Supposing this were put in another way, and Oregon and Washington together as representing that northwest whose forests are said to be inexhaustible, and we will have as the value of the two for 1880, $3,765,205, as against $22,457,359 for our own State alone. In other words, we were destroying our forests almost six times as fast as Oregon and Washington combined. Judging the future by the past, in much less than half a century, under present processes, our State will be stripped of her forest growth, and estimating the demand

upon the (Pacific) Northwest as five times as great as that now upon this State, we should have thirty times the demand made upon Oregon and Washington that is made now. And this starts the question, how long would these forests be a hope to the nation because they were "inexhaustible?" There is no flattering unction to be laid to our souls unless we begin to plant forests, at least as fast as we cut them down. If we do not, the want of timber will lead to business stagnation, and to shame, that we could have been so short-sighted.

EDITORIAL NOTES.

LEGISLATIVE FORESTRY.—It is said that so far as can be learned, no one has availed himself of the extraordinary liberality of the Legislature of Pennsylvania, which permitted a man to neglect the public roads, provided he planted trees along their sides. The Pennsylvania farmer has no idea of sticking in the mud with his team, in order that the few score trees he may plant shall keep posterity from living in "an arid, treeless waste."

Perhaps he has studied road making as well as forestry, and has learned that roadside trees add 25 per cent. to the annual expense of road maintenance —a practical thought which probably did not occur to the excellent people who have urged Legislatures on to these trifling enactments.

AN AMERICAN FORESTER ABROAD.—It is related in English journals that during his recent visit to Europe, Mr. Wm. Little, of Montreal, found himself on an excursion with the Scottish Arboricultural Society. It was desirable to climb a tall tree of Picea nobilis to get a cone. No one would venture up for it. Seeing the hesitation of the "sturdy band of stalwart Scotch and English foresters," Mr. Little "flung off his hat and coat, and with the nimbleness of a squirrel in a few minutes brought down some cones."

THE SILK MULBERRY.—Mr. Felix Gillett, of Nevada, California, thinks there is no profit in the small leaved forms of the white mulberry. The large leaved varieties should be preferred where practicable. The trees should be kept as bushes, for convenience in the daily gathering of the leaves.

BEAUTY OF YELLOW PINE.—The *Northwest Lumberman* says: "Yellow pine, hard finished in oil, is the rival in beauty of any wood that grows, not excepting the costliest hardwoods. It is susceptible of receiving and maintaining as high a degree of polish as any wood with which we are familiar, and as to durability, when thoroughly impregnated with oil, it may be said to be almost everlasting. In such a condition it is impervious to even hot grease and other substances that leave an ineffaceable stain upon white pine, maple, and various other woods. Flooring for use under carpets should be largely sap, and when exposed either for inside or outside use, should be as near all heart as possible. For inside trimming, wainscoting or panel work, the curly variety, which, by the way, can only be obtained in limited quantities, and ought to bring from $60 to $80 per thousand in any market, instead of only half that sum—is, in the writer's estimation at least, superior to either cherry or bird's eye maple."

Unfortunately "yellow pine" is given to so many kinds of pine, we should be glad to know what species receives this name in the Northwest.

THE LATEST FROM TIMBER-LAND.—The period now fixed by a prominent forestry essayist for the "utter disappearance of every stick of American timber," is now placed at seven years. He is not so liberal as old Ben Franklin. If we remember correctly he put the period at twenty years.

THE PEPPER TREE—The Schinus Molle, a Peruvian tree, thrives admirably in California. The editor saw trees as large as an average oak would grow in many parts of California. A very fine line of them along the public road is seen near Mr. Shinn's home, at Niles. As to the relative value of this and Eucalyptus, we find the following in a California paper, which seems to us as a good estimate:

"I also know that it is worth one-half of the stovewood they make, to cut up and split it and it must be done soon after it is cut down or it is impossible to split it. The wood don't compare in quality with oak but is better than willow; about like sycamore. For timber it is entirely useless and for posts and stakes it rots in one or two years. I planted the next spring, after the gums, six pepper trees and they average larger than the gums in diameter and would make more wood per tree, easy to chop and split and fully equal in quality. If my grove was pepper, I would now cut the limbs off and make twenty cords of wood and in three years they would have grown out again larger than they are now."

A LARGE TULIP TREE.—A specimen cut down in Cayuga county, near Cayuga Lake, according to a correspondent of the *Country Gentleman*, measured 6 feet across and was 124 feet high. Another was 6 feet 4 inches, cut some time since.

NATURAL HISTORY AND SCIENCE.

COMMUNICATIONS.

LONGEVITY OF TREES.

BY THOMAS MEEHAN.

At the meeting of the Botanical Section of the Academy of Natural Sciences, of Philadelphia, Mr. Thomas Meehan remarked that there was nothing phenomenal in the great age of the mammoth Sequoias, as other trees on the Pacific Coast exhibited great age. In order to ascertain whether more than one annual circle of wood is formed in each year, he tested the matter in various ways. For instance, a pine or spruce would be found to make an average growth of a foot a year up to fifteen years old; from that to about thirty years, nine inches; from that on, six inches; after that a stage was reached where the erect growth ceased to any considerable extent, and the growth force seemed turned towards the lateral branches. In the pine forests of the Pacific Coast there was no danger of error in fixing the age of the average tree of sixty feet high at about fifty years. Whenever such a tree was cut down, and an opportunity afforded to count the circles, they would be found to correspond so nearly with the calculated age, as to prove that it was quite safe to assume a single circle for a single year. Then there was a remarkable degree of uniformity in the diameter of these annual growths in most trees, so that when once we had the number of circular lines to an inch, and the diameter of the tree, we could tell its age near enough for general purposes. In some pine trees growing on very rich soil, he had found as few as about four circles to an inch. For instance, a section of a Pinus Lambertiana in Mariposa, four feet across, had but 189 circles; but here the increased size of the trees corresponds with the larger annual circles. Trees of this species of pine here measuring thirty, and a few thirty-three feet round were not uncommon. No matter, however, how vigorous may be the growth of trees under fifty or over one hundred years, they decrease with age, and we may safely allow six rings to an inch in these older sugar pines, which would make the thirty-three feet tree 396 years old. The outer growths of sequoia were very narrow. He counted as many as eighteen to the inch, while the rings in the interior of cross-sections would show about six to the inch. Allowing twelve as the average per annum, a tree of thirty-three feet diameter would give 2,376 years old, which is about the same as given by an actual count of the rings.

At Harrisburg, or Juneau, in latitude 58°, a Sitka spruce (Abies Sitkensis) cut down gave 149 rings from center to circumference—298 lines in a trunk three feet across. This gave an average of about eight to an inch in this 149-year-old, three-foot tree. At Wrangel, latitude 56° 30′, a tree of the Western Hemlock (Abies Mertensiana) which had been blown down and afterwards divided by a cross-cut saw at four feet from its base, gave eighteen lines to an inch, and the annual growths seemed very regular almost to the centre of the tree. It was six feet in diameter, and must have been a grand old tree in its day. It had evidently been broken off years before it was blown down, but the length of the trunk up to where it had been broken was 132 feet, and four feet in diameter at that height. But allowing as much as twelve to an inch, it would give for the point cut across, six feet, an age of 432 years. At Kaigan Harbor, latitude 55°, the Sitka spruces were very large, and of great height. He measured two of the largest, which were twenty-one feet in circumference each. Allowing eight to the inch, as in the tree of the same species at Harrisburg, it gives 336 years as the age of the tree. So far as appearances went, these trees were in the height of vigor, and there seemed no reason, judging from experience in other cases, why these trees might not flourish for a hundred years yet. Mr. Meehan had no doubt that these trees in these latitudes in Alaska would easily have a life of 500 years.

Turning now to the Atlantic States, we find 200 years as the full average term of life for its forest trees, with the exception, perhaps, of the plane (Platanus occidentalis), which is the longest lived of all. Trees famous for longevity in Europe are comparatively short lived here. In the old Bartram Garden near Philadelphia, and where the

trees can be little more than 150 years old, nearly all are past their best. The English oak (Quercus Robur), which in England is said to live for a thousand years, has grown to full size and wholly died away in this garden, and the foreign spruces are on the down grade. The great cypress (Taxodium distichum), and which must have made an average growth of four lines a year, has also begun to show signs of deterioration. Silver firs (Abies pectinata) in the vicinity of Philadelphia known to be planted in 1800 are decaying. This is the general experience.

In seeking for the cause of this difference we are accustomed to look at the relative humidity of the atmospheres of Great Britain and the Atlantic United States. Evergreens like Cerasus Lauro-Cerasus, Laurus nobilis and Viburnum tinus, which will endure a temperature of 25° below freezing point in Great Britain, are killed by 10° in Philadelphia; and, it is believed, by the dryer atmosphere causing a heavier drain for moisture on the vital powers of the plant to supply. A strain which will wholly destroy plants in some instances, must have an enervating influence where it does not wholly destroy, and this would naturally be exhibited in shortening the life of the tree.

The climate of Alaska had the same favoring influences we found in Great Britain. The warm Sea of Japan flowed against its south-eastern face, along which the trees referred to were found. The atmosphere was always moist, and severe weather almost unknown. At Sitka, in latitude 57°, as much as 100 inches of rain had fallen in a single year. The harbor was rarely frozen—boats came in and went out at all times of the year. There were some winters when no ice of any consequence was seen. These were circumstances favorable to longevity in trees.

Mr. Meehan concluded by remarking that Dr. Lindley had said somewhere that his researches had failed to show that there was any period of duration of life set for any tree, and that if circumstances favored there seemed no reason why trees might not live for an indefinite period, and therefore arguments offered in connection with the "wearing out of varieties" based on what is called the "natural life of a tree" had little force. Mr. Meehan believed his observations on the longevity of trees on the Pacific Coast confirmed Dr. Lindley's views. At any rate, there seemed nothing phenomenal in the age of the Sequoia gigantea, as other species partook of similar longevity to a great extent.

EDITORIAL NOTES.

PODOPHYLLUM IN FORMOSA.—Dr. Hance records in the *Journal of Botany* the existence of a species of this genus in the island of Formosa. Previously botanists knew only of the common North American species and of the Himalayan one, P. Emodi (see *Gardeners' Chronicle*, p. 241, vol. xviii.), which has also lately been discovered in the province of Kansu. The discovery of a new species in Formosa (P. pleianthum) might have been anticipated.—*Gardeners' Chronicle.*

SUBER-CELL.—This is a technical term indicating the origin of the corky growths of vegetation. In the paper on Arizona potatoes, in the November number the compositor made it read "tuber-cell," and though corrected in the proof, persisted in retaining it. As tubers were referred to properly in other parts of the paragraph, he concluded the editor must have written "suber" by mistake, in spite of the editor's own correction! No wonder even the virtuous Greeley would sometimes get provoked at proof-readers and compositors. Certainly there ought to be some special place of torment provided for them, as some of our correspondents occasionally suggest.

IS KALMIA POISONOUS?—*Revue Horticole* of August 16 gives a case where a mass of grass was mown and thrown out for goats, which ate thereof. Soon after the animals were taken by violent contractions of the stomach and vomiting, and one died next day. The writer says the dry seed vessels from a cultivated mass of Kalma latifolia had been cut off and thrown on these lawn mowings, and the sickness of the goats is attributed to the Kalmia seeds. The editor thinks the experiment ought to be repeated, so as to give more certainty to the impression that Kalmia did the evil, and that other ericaceous plants should be tested. He believes Rhododendron ponticum is poisonous.

DRINK FROM THE EUCALYPTUS.—From the spring sap of one of the celebrated gum trees of Australia, Eucalyptus Gunnii, a very pleasant drink is prepared, which, in that part of the world, is known as "gum cider." Besides this, pure water is said to be obtained by the thirsty traveler from the roots. After being dug they are cut into short lengths, and stood upright in vessels, when the water drains out and is then drunk.

THE LEAVES OF MARANTAS.—On the upper part of the leaf-stalk of Maranta there is an articulation, and at this point the leaves rise and fall at stated periods in its daily life. This gives

the genus a particular interest to the student of natural history, in addition to the singular beauty of the leaf blades themselves. At the grand exhibition of the Pennsylvania Horticultural Society in September, the Marantas were the most admired of all the new plants. The illustration is of M. nitens, a new one introduced by Mr. Bull, of London, who says it is an elegant and small-growing plant, imported from Brazil. The leaves are green with a bright glossy surface, marked on each side of the midrib with a series of oblong acute bars, alternating with numerous lines of a dark green on the palish bright green ground. The plant is distinct and of a pleasing character,

Maranta nitens.

SUGAR FROM SORGHUM.—There seems no doubt now of the success of this industry. In Cape May county, New Jersey, the enterprise is now in its third year, and from all accounts it is quite profitable.

THE LATTICE-LEAF PLANT.—This wonderfully interesting water plant, which seems to have leaves made up only of veins, without any green connecting tissue, is among the latest additions to the excellent collection of Mr. Sturtevant, of Bordentown, N. J.

DEAD WOOD ON TREES.—The editor of this magazine, stated in these columns some years ago that a dead branch on a tree makes almost as great a strain on the main plant for moisture as does a living one, and many of the practical directions in this magazine have been based on this fact. Some good people, not satisfied with the authority, called Prof. Bessey's attention to the statement, who thus replies in the New York *Tribune*:

"I have been asked whether the statement lately going the rounds of the American papers that 'a dead branch on a tree makes almost as great a strain on the main plant for moisture as does a living one' is accurate or not. The statement is coupled with another referring to its practical application in tree culture, the conclusion being that every dead branch 'should be at once cut away.' Briefly it might be answered that the first statement is true in the main, and that, without any doubt at all, the conclusion is a wise one, and ought to be followed in practice. To explain this matter will take considerably more space, and in order to understand it we must go to vegetable physiology and inquire into the nature of the evaporation of water from plants. It was long supposed to be a physiological process, and was considered to be entirely different from ordinary physical evaporation. As long as this view was held the process was called transpiration, to distinguish it from the physical process. The breathing pores, the stomata, which occur in the epidermis of all leaves in great numbers, were supposed to be organs of transpiration, which was considered to be one of the most important functions of the leaf."

EPICURES AMONG BIRDS.—Birds and beasts have their epicurean tastes and will go through a good deal of labor for the sake of a very little titbit. In Australia there is a species of pigeon (Carpophaga spilorhoa) which feeds, or rather takes a sort of appetizer, on the fruit of a combretaceous plant, named Terminalia melanocarpa. This fruit is little more than a hard stone, an inch long, with the thinnest kind of a sarcocarp. It certainly can afford no nourishment to its greedy devourers, but must be enjoyed solely for the extremely bitter and to human beings very unpleasant taste.—*Independent.*

SHEEP-KILLING KALMIA.—It now having been clearly demonstrated by chemical analysis, as published in the GARDENERS' MONTHLY, that there is no poison in the leaves of Kalmia, some other theory has to be guessed at, and a correspondent of a foreign horticultural journal states, as a result of observation and experiment on his part, that Kalmia latifolia (mountain laurel) kills sheep that eat its leaves, not because of any poisonous properties in the leaf, but because of injuries caused in the animal's stomach by the sharp edges of the leaves.

VARIETY IN NATURE—Some attention is just now being paid in Europe to the singular circumcumstance of almost identical variations from normal specific forms appearing simultaneously in widely separated localities. This has long been noted in this country and the facts placed on record. The form of the bird's-foot violet, Viola pedata, which has the two upper petals purple or crimson, as in the pansy, is often found in various parts of our country. It has also been recorded that the form of blackberry with very large heart-shaped leaves is very local yet widely scattered. A curious variety of raspberry—once raised to the dignity of a species by Prof. Peck as Rubus neglectus—occasionally appears as isolated plants in localities a long distance apart. The facts are of great importance to the evolutionist. If species are only varieties more advanced, and if identical varieties will appear from different individuals a long way separated, there is no necessity for the belief that all species sprung from a solitary individual in the usual sense of the word, and then spread from one common center. Identical species may have had several home centers.—*Independent.*

BATTLES BETWEEN ANTS.—Horticulturists have excellent opportunities to observe natural phenomena, denied to many others. Studies in ants are especially interesting. They fight like human beings, seeming to have their generals, captains and privates, with regular military manœuvres as human beings have. Dr. Henry McCook, of Philadelphia, has given histories of these creatures, which, only for general observation confirming what he says, might be almost regarded as fictitious. They are following after our investigation in the old world. A recent number of *Le Temps* records a battle lasting seven days, and reporting that the armies started every day at

"exactly four o'clock." We rather doubt whether the ant has progressed further in civilization than to know how to murder and enslave each other, and believe they have not yet invented time-pieces, so as to get exactly the hour, and, on the whole, the French account reads very much as if it were in the main made up from one of Dr. McCook's papers, and in the other part from the imagination. An opera glass is needed to see an ant battle to the best advantage.

PROGRESS OF PLANT KNOWLEDGE.—How the knowledge of plants has progressed of late years may be illustrated by that curious family Orchideæ. Linnæus could count all his genera on his fingers; now Bentham and Hooker in their recent work describe 334.—*Independent.*

POISONOUS KALMIA.—Now it is Dr. Zabriskie mentions to the editor of the *Rural New Yorker* a case in which a young lady ate a few leaves of the Kalmia latifolia (mountain laurel or calico bush) as she was passing through the woods. She died that night. It has already been stated in our magazine that a chemical examination of the leaves has been made without a trace of poison being found in them. What the young lady wanted to eat "a few leaves" for is not apparent. And if she did, there are plenty of people who "died in the night" who never saw a kalmia leaf.

THE HOLY GRASS.—Amongst the curiosities in Mr. Barlow's garden at Stakehill are some tufts of the rare holy grass (Hierochloe borealis), which may be considered a native of Britain, though only met with in a few stations in Scotland; but is common in North Germany, Norway, Sweden, Lapland and Russian-America. It is of short-tufted and somewhat untidy growth, the leaves rather broad, but short and springing from stout stems, the panicle few-flowered and remotely holcus-like, the glumes yellowish. It is the Holcus odoratus of Linnæus, Smith and Sinclair; Hierochloe borealis of Hooker and Greville. It obtains its name of "holy grass" because of its dedication to the Virgin Mary by the Christians of the East, being in certain places scattered at the doors of churches in the same manner that Acorus calamus is at the present day scattered at Norwich. In Prussia it has some celebrity in this way, and in Sweden it is hung over the beds of the wakeful in the belief that it induces sleep. That it has a property to justify the belief is likely, for it is powerfully and delightfully aromatic, probably more so than the well-known and agreeably fragrant Anthoxanthum odoratum. A tiny sprig that, by Mr. Barlow's persuasion, I placed in my pocket-book three weeks ago is now more fragrant than when first gathered, and the odor of the dry specimen resembles that of woodruff, which, it may be remarked, is now at its best for perfuming books and linen. It is figured in Lowe's "British Grasses," from a specimen gathered at Thurso by the late Mr. Robert Dick, and it is there recorded that Mr. G. Don met with it in a mountain valley called Kella, near Glen Shee, Forfarshire.—*Gardeners' Magazine.*

THE CURL IN THE PEACH LEAF.—Most of the readers of the GARDENERS' MONTHLY know that the curl in the peach leaf is caused by a fungus, what that fungus is, how it operates and how very injurious to the peach tree is its operation. But it does good to repeat lessons which have been taught, and especially when the lessons come from varied teaching; so we give here the latest lesson given by Professor Penhallow through the columns of the *Country Gentleman:*

"The curl in the peach leaf is caused by the growth of a fungus known as Exoascus deformans, Freckel (Ascomyces deformans, Berk, Taphrina deformans, Tul.). During its growth it not only causes the leaves to curl, but to lose their green color and become more or less red and yellow, and we see from this, therefore, that such leaves are incapable of performing their normal functions in the assimilative processes of the plant. The necessary result of this is, that there is a very limited formation of wood while such leaves remain on the tree. For this period, therefore, it must be admitted that the curl does exert a positively injurious influence. It is found, however, that these leaves fall off during the month of June, and a new set of leaves free from curl appears. Upon these, then, the entire growth of the season depends, and because, unless otherwise diseased, the tree then very frequently makes a fine growth, fruit-growers generally believe that the curl is of no importance, and that it does not injure the tree at all."

SCRAPS AND QUERIES.

NOTES ON THE NOVEMBER NUMBER.—"A. G.," Cambridge, Massachusetts, says: "GARDENERS' MONTHLY, page 322. There is no Tropæolum Canariensis, and the contradiction of terms between 'Canariensis,' which in English is 'of the Canaries,' and the statement that it is 'a native of New Grenada and Peru' is direct. I wonder you did not see it.

"I can venture to say with confidence that the Spruce on White-Top and on Roan is not 'Abies alba,' as you say, on page 339, but is A. nigra.

"I hope your readers will be edified by the lucid

answer given on page 342, near top of second column.

"Line 9 from bottom—'A 'shrewd guess' is thought to be a good or happy guess. Is that what you mean? I don't think they are shrewd."

[Corrections and suggestions are always welcome. It may be well to say that a very large number of our correspondents forget that the magazine has to go to press nearly a month before the date of issue, and that an immense amount of correspondence comes in a few days before the month, and great efforts have to be made to attend to the wants of all, rather than have them lie over another month. Considering the immense field covered by the GARDENERS' MONTHLY, and the rapid and brief manner in which much of this correspondence must be treated, the editor is proud that so few errors occur.

In regard to the Tropæolum, though a native of the American continent, it was first received into English gardens from the Canary Islands, where it was grown under the name of Canary-bird flower. Among horticulturists it received on this account the name of T. Canariensis, under which it is still so well known to this day, that if its proper botanical name had been employed, few of our readers would have known what we were speaking of. However, if we are to speak botanically, we might tell our readers that some botanists do not regard it as Tropæolum at all, but would have us call it "Chymocarpus," and there is a difference of opinion as to its specific name, some calling it T. aduncum, T. Smithii, or T. peregrinum.

Those who were not "edified" by the very brief way in which we felt compelled to treat a very abstruse subject, may consult at greater length Herbert Spencer's Biology. Spencer is one of "some botanists" to whom we referred.

We were certainly wrong in using the word "shrewd" in connection with Grant Allen's speculations; "plausible guesses" would have been better.—Ed. G. M.]

DOG-TOOTH GRASS.—Dr. Gerard writes: "On page 340 of GARDENERS' MONTHLY you remark that you would venture a guess that even our good friends of the *Garden* do not know what M. Delaunay means by 'dog-tooth grass.'" This is an old English name for Triticum caninum, Huds., the Gramen caninum of the older botanists, and the Chien dent of the French. It, as well as Cynodon dactylon, is so called, says Prior, because of 'the sharp-pointed shoots of its underground stems.' Some grasses are said to be emetic and purgative, as, for example, Bromus purgans and B. catharticus. The long roots of Cynodon dactylon have been held in some repute as a substitute for sarsaparilla."

DISTRIBUTION OF THE WHITE SPRUCE.—"A. M.," Pittsburg, Pa., says: "Referring to the letter of 'W. D. K.,' in your November number, permit me to add that I found magnificent specimens of the White (sometimes called Blue) Spruce on the slopes of Long's Peak, Col., at an elevation of eight thousand feet, and smaller trees of the same variety, to the exclusion of all other evergreens, all the way from there up to the 'timber line,' say ten thousand to eleven thousand feet elevations above the sea level. Lower down there was a fair mixture of Balsam Fir."

[This note is an illustration of the confusion arising from the indiscriminate use of common names. The "white" or "blue" spruce of Long's Peak at the lower elevations is Abies pungens—the higher ones chiefly A. Englemanni—the "Balsam" Fir, Abies concolor. The one referred to in the November number is, we took to be, the original white spruce, Abies alba, but which, as Dr. Gray corrects in the present number, should have properly been credited to the black spruce.—Ed. G. M.]

LITERATURE, TRAVELS AND PERSONAL NOTES.

COMMUNICATIONS.

THE $3750 ROSE: WM. FRANCIS BENNETT.

BY PETER HENDERSON.

I suppose that most of the readers of THE MONTHLY have heard the story of Mr. Evans, of Philadelphia, having paid this large amount to Mr. Henry Bennett, of London, probably the largest amount that was ever paid for the stock of any rose in this country. Cheap enough it would have been in all probability had it not been trammelled with the extraordinary condition that no

cuttings or plants should be sold for four years, Mr. Evans having to look for his profits from the cut flowers—but here is where the snag comes. It is well known that rosebuds can not now be sold unless cut with long stems, and the question arises, how is Mr. Evans going to prevent the cuttings attached to the buds from being used by others for the purpose of propagation?

In a visit by some half a dozen of us, all veterans in the trade, at Mr. Evans' place last March, the question was raised for Mr. E's benefit of what was the best means of killing the leaf bud, or to prevent its growth. Various remedies were suggested, such as touching the leaf bud with acid, cutting it out, and squeezing the bud and stems. The two latter methods we have experimented with and find that neither of them is safe. Cuttings of several varieties of roses put in a month ago, that were squeezed both in the stem and bud, granulated throughout and rooted quite as quickly as others put in at the same time without mutilation, and seemingly will make quite as good plants. Others from which the buds were cut—leaving the leaf on of course—in two out of three developed latent side buds, so that it seems neither of these methods is safe. If the suggestion of destroying the bud with acid were practicable it certainly would be objectionable from the danger to the hands when handling the roses. The subject becomes one of very general interest, for although it is rare that such an extraordinary compact as that between Mr. Bennett and Mr. Evans occurs, yet cases must constantly be coming up where the buds of new roses that may sell only at ten cents each must have cuttings attached to them where the plants sell at one dollar or more each. So that the owner of new varieties must either sacrifice his flowers or give for ten cents what is worth to him a dollar.

THE LONDON FLOWER SELLER.

BY F.

If the editor of the GARDENERS' MONTHLY deems the enclosed—cut from an English newspaper—worthy a corner in his work, it may be to some reader a pleasing retrospect. Although it is over fifty years since he bought his "Last Moss Rose," for a penny, in the streets of London, he is vividly reminded of the sellers and their offerings. The beauties of floral existence are often associated with poverty, sin, and homely human features; yet some are of the sort which old Bill Cobbett saw in Wiltshire, planting cabbages, when he says he was half tempted to take a "kiss," which he would rather do from such an one, than lick the paint from the cheeks of a Duchess.

THE LONDON FLOWER SELLER.

A rose—a rose for a penny!
And pansies twopence a bunch!
There's the baker with loaves baked freshly,
And O for a crust to munch!

All day I've sat by the station,
But nobody wants my flowers;
The wet streets steam and the sun bursts
Between the thunder-showers.

Carnations, pink and crimson,
Fresh gathered, sweet and strong!
But over the shining pavement
The passengers hurry along.

Sweet-peas! By some cottage window
They grew; for I've seen such grow,
Rosy-white, like the face of the darling
I lost in the time of snow.

My child, my sinless blossom,
My pride, though the mark of scorn!
O, God! I was such a baby
Myself when the babe was born!

The mignonette's drooping sadly;
Will it sell? it is fragrant still;
Lame Milly once had some blowing
Upon her window-sill.

White jessamine!—like that lady,
So dainty, and clean, and sweet,
From the curl on her tranquil forehead
To the tips of her delicate feet.

O, to be once as she is,
With never a soil or stain!
Men bowing or speaking her gently
As she passes on to her train.

Not half so pretty as I am,
Not rich, for she walks to-day;
But out of the filth and riot,
And pure as the jasmine spray.

Did her father drink, I wonder?
Was she nursed in sins and shames?
Did they beat her, starve her, kick her,
And call her filthy names?

Sweet-williams! Tossed me for nothing
By a lad at a fruiterer's stall:
Brown-bearded, fresh and wholesome
They are, and strong and tall,

Like fresh-faced Will from the country,
Who spoke of field and plough,
And promised me marriage and left me—
Who loves him, I wonder, now?

The sky is all black; in the distance
The angry thunder rolls;
There's a blinding flash, with a deluge
The rain sweeps the hurrying shoals.

It sweeps up under my shelter,
I'm wet again to the skin,
And just two bunches of pansies
Would buy me a drop of gin.

A rose—a rose for a penny!
White lilies a penny apiece!
The clouds from the sun are breaking,
The showers soon will cease.

A pigeon, with wings all shining,
Flits by in the sudden gold,
As if in a molten rainbow
His beautiful plumes were rolled.

Ah! my dream of the angel singing,
His eyes one flame of love,
"Though thou liest among the potsherds,
Thou shalt be as the wings of a dove."

Roses, sweet-williams, pansies,
Jasmine and lilies fair,
Mignonette, sweet-peas, carnations,
Drooping in sultry air.

MAXWELL GRAY.

THE EUROPEAN EMBARGO ON AMERICAN PLANTS AND ROOTS.

BY PETER HENDERSON.

In your remarks on this subject in the November MONTHLY you seem to deprecate the idea of retaliation. That seems to me to be the only way to bring the idiots who swayed the Berne Convention of July 4th, 1883, to their senses. Let us make use of the same weapons, suicidal though they be, and we may rest assured that less than twelve months will suffice to bring these wiseacres to their sober second thoughts. About the only horticultural commodities that America exports to Europe in quantity are tuberoses and potatoes, probably not exceeding in amount $100,000 per year, while the United States undoubtedly imports fifty times, and perhaps one hundred times, that amount in bulbs and plants. True, it would be a deprivation and loss to resort to such an expedient as to have our government retaliate, but Europe has everything to lose in such a fight. We are every year becoming better able to grow the bulbs and plants that we are importing, and were we forced upon our own resources it might be the best thing that could happen to us, as in our great variety of soil and climate we would probably find that even Holland bulbs and other similar roots could be as well grown here as there. It is not more than twenty years ago that we thought it necessary to import all our gladiolus, and some of our tuberose bulbs. Now we can give them odds on both. Twelve months loss to Europe of America as a customer for her bulbs and plants would cause her to run up the white flag and ask for a cessation of hostilities, but that she will meanly keep up this one-sided fight unless we strike back, and strike back promptly, I can see no reason to doubt. Had there been a shadow of reason for the sweeping restriction against American plants and bulbs being landed in Europe it would have been easier to bear, but to give the trivial pretext that it is to prevent the introduction of phylloxera into lands already swarming with it shows that the members of the Berne Convention were either a lot of senseless old grannies, or else they were influenced by parties whose interest it was to prevent the few American exports of bulbs, etc., reaching Europe, and made use of this absurd and miserable excuse for that purpose. It is unpleasant to think that human nature is so depraved that men will stoop to such means for the attainment of ends. But who can tell? Even Bismarck was disturbed by the ghost of trichina in American pork, although he could swallow the infinitely more numerous worms in his own native article without seeing them.

EDITORIAL NOTES.

JOHN J. THOMAS.—(See frontispiece to the annual volume). In our botanical works we read of the corky white elm, Ulmus suberosa of Thomas, who first discovered, described and named it. This botanist was David Thomas, chief engineer of the Western portion of the Erie Canal, and father to the subject of this sketch, who thus inherited a taste for his father's scientific and mechanical pursuits. John J. was born near Cayuga Lake, in Cayuga county, New York, in the year 1810. The father being absent on his professional pursuits from 1820 to 1828, the son had, in a measure, to superintend his own education. With a natural fondness for intellectual studies, he soon acquired a considerable knowledge of the natural and physical sciences, which he applied to the advancement of his horticultural and agricultural pursuits. In his twenty-first year he became associate editor of the old, and, in its day, very successful *Genesee Farmer*, first published at that time by Luther Tucker & Son, with which he remained in connection many years. In 1840 the *Albany Cultivator*, a monthly magazine, was consolidated with the *Genesee Farmer*, and J. J. Thomas continued as horticultural editor. This again became a weekly—the *Country Gentleman*, in 1853, with Mr. Thomas as horticultural editor—so that we may say he has been continuously in the editorial chair of what is actually a continuous serial for over fifty years. Few of us can boast of so many years of persevering usefulness. During a great part of this time he was engaged in business as a nurseryman, wherein he had an excellent opportunity to put into practice his horticultural learning, and was thus enabled to speak from actual experience, as well as from thoughtful study. His business career extended over thirty years.

His pen and pencil have not been confined to editorial pursuits alone. In 1846 he issued the *Fruit Culturist*, which has been so popular that no less than nineteen successive editions have been called for, a career of usefulness allotted to but very few horticultural works. It started as a small 18mo, and has grown to a handsome octavo work. As the inventor of Thomas' smoothing harrow and other implements, he is as well known to the agricultural as to the horticultural community, and the drawings in his widely read work on farm implements

are all the work of his hands. The remarkably successful illustrated *Register of Rural Affairs*, published by Luther Tucker & Son each year since 1855, contain altogether nearly 2,000 engravings, all from the drawings that his busy pencil furnished. He was one of the founders of the Western New York Horticultural Society, and its first President, holding the honor by election through several subsequent years, and for many years past has been chairman of one of the standing committees of the American Pomological Society.

Like so many of our leading horticulturists, he has not confined his labors to the advancement solely of his own class, but has labored to advance the interests of the whole community. His services in the cause of public education have been of a high order. The famous Oakwood Seminary was founded through his labors, and as managing trustee or president he conducted its business for sixteen years, carrying it through several critical periods to ultimate safety and success. His family consists of a wife and daughters, and all members of the Society of Friends. Among living horticultural authors, J. J. Thomas occupies a very distinguished rank, and we are happy to have the opportunity of placing his portrait among our annual illustrations.

GOVERNMENT OFFICIALS.—It seems very unfortunate that our government employs no one but ignoramuses or inefficients—at least in the opinion of those who succeed in following those gone before. For instance, in a government document on "Contagious diseases of domesticated animals," Dr. H. J. Detmars "lets off" on Professor J. Gamgee. It is stated that "every one with an unbiased mind and a fair knowledge of general pathology," ought to know better. Professor Gamgee's biased mind and ignorance of general pathology is certainly a misfortune, but then Gamgee may have satisfaction in reflecting that whoever precedes another in office is generally found to be a perfect ignoramus by his successor.

PROGRESS OF THE NURSERY BUSINESS.—In spite of the serious depression in the nursery business a few years ago, caused by an immense overproduction and sales at low figures, which produced wide-spread bankruptcy, there has been a gradual revival, and numbers of new firms are starting everywhere. Mr. Albaugh says of the Ohio valley that the exact extent of the nursery interest of this valley at the present time may not be known to all. There are now within a circle having a radius of about twenty miles, with its center, say at or near Tadmor or Tippecanoe, not less than sixty separate and distinct nurseries.

HISTORY OF THE CAMELLIA IN AMERICA.—With a colored plate of the beautiful crimson-scarlet variety, C. M. Hovey, the London *Garden* gives from the pen of Mr. Hovey the following reminiscences of the improvement of the camellia in America. There are evidently some printer's mistakes in deciphering Mr. Hovey's manuscript, of which we may perhaps suggest that Samuel Fend is intended for Samuel Feast;

"But it was in 1830 that I for the first time visited New York and the garden of the late Michael Floy, of that city, to see his great collection of seedlings, and this gave me camellias on the brain. I thought of nothing but camellias, dreamt of them, read about them, purchased them; yes, one hundred and fifty, and about as worthless a number to-day as one could get together, though some of them cost 20 fr. and 30 fr. each. And, as to add fuel to flame, I also visited Philadelphia for the first time, and there found the florists all growing camellias and raising seedlings. I found my good old friend, Robert Buist, with a houseful of fine young camellias and lots of seedlings, and Mr. Landreth, who had only a year or two before produced the very fine Landrethi, still a good sort, only a poor grower. Mr. Smith had also a house of rare palms and cacti, and some fine seedling camellias, Smith's amabilis being still a beautiful one; and a young man, gardener to Mr. Geo. Pepper, in Chestnut street, named Chalmers, had produced some superior seedlings, Chalmers' perfection being one of them. Then there was Mr. P. Mackenzie, who raised subsequently Jenny Lind, which Henderson purchased for 200 guineas. Proceeding to Baltimore, I found Mr. Samuel Fend had anticipated me, and also produced one or two very beautiful sorts, and so had Mr. Kurtz and Dr. Edmondson. At Washington I found quantities of seedlings, all pretty good, but none extra fine. Returning home, on my way I accidentally became acquainted with the late Mr. P. Dunlap, then gardener close to New York. He, too, had some fine seedlings, and he introduced me to an old sailor and neighbor, Capt. Harrison, who had a most beautiful double white, more exquisite than abla plena, a perfect gem to-day. This same Capt. Harrison also raised the yellow Harrison's rose, which I believe some English rosarians consider to be about the most beautiful and valuable hardy or yellow rose extant. So you see we do raise some good things in America, or, perhaps I should say, did so fifty years ago. All, or about all, of Mr. Floy's camellias were seedlings, a house, 40 feet long, being full in the center with the grand Floyi; the various kinds numbered nearly fifty, the names and descriptions of which were published in Hovey's *Magazine of Horticulture* in 1838 (vol. iv., p. 155). Mr. Floy was an English gardener, who came to America in the year 1800, bringing with him plants of the old double white, believed to be the first ever im-

ported into America. He was an intelligent and enthusiastic cultivator, and a corresponding member of the London Horticultural Society, to whose valuable transactions he communicated some very interesting information about American fruits and forwarded a collection of our finest peach trees for trial."

APPLE BUTTER.—In almost every part of the world "Schimmel" is known in connection with apple butter and fruit preserving generally. This enormous business, like so many of great magnitude, began in a small way; a five-dollar kettle and twenty dollars in cash began the concern. Wife and sister boiled during the day, while the husband went round selling the product to the neighboring stores. Only think of fifty thousand pounds a day, as turned out now, of this toothsome product of the apple orchard. Like so many extremely busy men in Philadelphia Jose O.Schimmel believes in continual self-improvement, and gives a good portion of his time when not engaged in active business to scientific studies. He is an active botanist, and one of the leading microscopists in the Academy of Natural Sciences, which has done so much in the cause of self-education.

ROSE WILLIAM FRANCIS BENNETT.—An Italian exchange on our table tells its readers: "Il Signor Bennett che l' ottenne ne ha ceduta l' edizione ad un Orticulture di Filadelfia per la somma di 20,000 franchi." We thought it well to let friend Evans see his purchase as it is rendered in Italian.

DISCUSSIONS ON STEAM HEATING.—We have given more than usual space to the steam heating question. There are some discussions we are glad of some excuse to cut short—this is not one of them. The subject has an immense interest. Just how far steam can be used profitably, and just what are its strong points and its weak points, have not yet been made as plain as they will yet be, and we fancy there will be room for good papers drawn from intelligent experience for some time to come. We shall, however, for want of space in justice to other topics, hold back those essays which merely offer the writer's opinions.

VEGETABLES AT WHOLESALE AND RETAIL.—A correspondent sends us the following with the remark that it was sent to a Philadelphia paper, but no response came to his inquiry:

"I live in the country, over in New Jersey. I moved there to secure low rent, pure air and water, healthy surroundings, fresh and cheap vegetables. You know the dream of the average city man. Well, I think I've got left on the cheap vegetables. Although surrounded with truck farms, we buy our vegetables in the city, carrying them down home ourselves, the reason being that the farmers ask two prices for anything they have to sell. They haul their produce five miles and sell in the city at one-third less than they are content to sell to neighbors in their own village. They seem to prefer to lose the time, labor, ferriage and expense of the long haul rather than sell in a home market, and we are compelled to go five miles to purchase a home product. How do you account for this?"

[It is remarkable that in a city where they have a "chair of political economy," attached to the University, no answer should be given. The explanation is that "Time is money," and that a man can make more money in taking one hour to go five miles and sell a thousand cabbages for $400, than he could by selling ten cabbages in the same time at home for even fifty cents apiece.—Ed. G. M.]

WILLIAM LOBB.—It is stated in horticultural biography that after collecting seeds in California he disappeared and no one knew what became of him. Dr. C. C. Parry has contributed a very interesting paper to the *Overland Monthly*, on the early botanical explorers of the Pacific coast, and there states that he met Lobb at Monterey, in 1850, and that Lobb was then collecting seeds for Veitch, and that he went about with him on his excursions. He was then planning a trip to the Big trees, having seen the cones in possession of Dr. Kellogg, who had named the tree Washingtonia gigantea. He afterwards went, probably to Calaveras, and got seeds, sending a description under the name of Wellingtonia gigantea—a name evidently suggested by Kellogg's proposition to name it after a great military man. General Bidwell saw the tree in 1843, and communicated the fact to Fremont, who seems to have regarded it merely as a big tree yarn. Mr. Lobb died some years subsequently, after becoming reduced in circumstances, and his remains are interred in Lone Mountain Cemetery.

GIDDING'S GREENHOUSES AT DANVILLE, ILLINOIS.—These are represented by Western papers as among the most interesting in the State. All the popular winter-cut flowers are grown to a large extent. The houses are heated by steam. Mr. A. C. Wasson is the Superintendent, and the business is regarded as a great success.

CHARLES F. PARKER.—The advantages which America offers over the old world, in the way of education, is in no way better shown than by the great interest manifested in the old world, when

some poor man succeeds in doing some good scientific work. Recently a book has been issued about a poor Scotchman who managed to get together a very fair herbarium of Scotch plants, and all accurately named. The book is very pleasant reading, and it is also pleasant to know that in the old world such merit is so well recognized.

Our point is, that such merit is not rare in this country, and the name which heads this is an illustrious example. He had nothing whatever, in early life, to attract him to botany. He simply loved his native wild flowers, got books and studied them, and was indeed a first-class botanist before those who were known as such, knew he was among them. No better testimonial to the success of his early endeavors could be offered, than the fact that he became one of the most valuable Curators which such a world-renowned institution as the Academy of Natural Sciences, of Philadelphia, ever had. We give place to the following paragraph, from the Philadelphia *Public Ledger* and the *North American*, in relation to his death, at 62 years: "Vice President Thomas Meehan, having taken the chair, at the last meeting of the Academy of Natural Sciences, announced the death on the 7th instant of the Curator-in-charge, Charles F. Parker. He alluded in feeling terms to the worth of the deceased as a man and his efficiency as an officer. Mr. Parker was elected a member of the Academy in 1865. Although during the greater part of his life he had been compelled to devote himself to mechanical employment, he had acquired a taste for natural history, which he lost no opportunity of satisfying by much more than a superficial study of plants and shells. As a botanist, especially, even before his connection with the Academy, he was well-known to Gray, Torrey, Bebb, and other distinguished authorities, and but few specialists considered it advisable to conclude their investigations of particular groups of plants without applying to Mr. Parker for the use of his illustrative material. The study of the plants of New Jersey always remained his own special province, and both in the completeness of his herbarium and the accuracy of his knowledge of its contents he had few if any equals. His active sympathy with the objects of the Academy caused him, even before his election to membership, to be an energetic worker in several of the departments of the museum, and, when formally associated with the society, devoted all the time he could spare from his work as proprietor and superintendent of the bindery department of "Godey's Lady's Book" to the arrangement of the herbarium, in co-operation with Messrs. Durand, Meehan, Burk and Redfield. His connection with the establishment alluded to had secured for him in the business world an enviable reputation for accuracy, reliability and unswerving integrity, and when, in 1873, he was elected one of the four curators of the Academy, it was evident that the Society would consult its best interests by making him responsible custodian of the collections. As it was becoming every day more evident that dependence could no longer be placed solely upon volunteer labor for the care and increase of the museum, Mr. Parker was appointed Curator-in-charge by the Council, and was shortly afterwards able, by an arrangement of his business affairs, to give his whole time to the Academy. How thoroughly and with what singleness of purpose he devoted himself to his official duties will not soon be forgotten by his associates. He was almost morbidly anxious to perform his work in such manner as to render faultfinding or adverse criticism impossible. The means at the disposal of the Academy were not sufficient to enable him to employ an assistant, and the actual manual work of the arrangement, as well as the general scientific determination of much of the material added to the museum during his administration was performed by himself. Those only who are acquainted with museum management are aware of the vast amount of labor involved in the orderly arrangement of natural objects. His associates had become so well aware of his neatness and dexterity of manipulation, and his systematic apportionment of time, combined with a certain instinct of orderly arrangement, that they had ceased to wonder at the results attained, but visitors from establishments of a like kind frequently expressed their amazement that so much could be accomplished by one individual. To workers in science, whether the members and students of the Academy or visitors desirous of consulting special collections, he always gave active sympathy and assistance. Although he may be succeeded by one having a more general knowledge of natural history in its several departments, or a more profound knowledge of a specialty, the Academy will probably not be able to secure the services of any one person able to perform the same work as economically and efficiently."

FREDERICK VERVAENE.—The name of Vervaene is connected with so many well-known flowers under cultivation that the following note, which we find in a New York paper, will be interesting to many readers:

"One of the most interesting visitors to Hoosick Falls this summer was Fred. Vervaene, superintendent of the greenhouses and grounds of the Messrs. Burden, of Troy. Mr. Vervaene was propagator in the exotic department of the government gardens at Van Houte, Belgium, thirty-five years ago, and shortly afterwards came to this country on a botanical expedition, exploring Mexico and Central America. Like many other eminent Europeans, he found a more extensive and congenial field for his talents here, and never returned to his native country. Selecting New England to commence operations, he found in Nathaniel Wheeler, of sewing-machine note, a faithful friend and employer, whose elegant grounds at Bridgeport, directed by Mr. Vervaene, soon became the envy of gardeners and many distinguished visitors—among the latter the late Horace Greeley and President Grant. As the pioneer of rose growing, he attracted universal attention, and the method of his early success is still practiced by many of our rose-growing establishments. He was subsequently engaged in the commercial florists' business at Bridgeport, where for twelve years he carried on one of the largest establishments in the country. In his present situation he directs all departments of his profession, plain and scientific, and flowers annually upwards of five thousand roses, and produces fruits and flowers at all seasons."

MONTREAL HORTICULTURAL SOCIETY—EIGHTH ANNUAL REPORT.—It is interesting to note by horticultural reports from different points of our great cosmopolitan parish, how different is the idea of horticulture in different parts thereof. In some parts the number of barrels of cranberries to an acre is horticulture pure and simple, while the true unadulterated article of horticulture in some other parts would be the number of pennies which could be squeezed out of the consumer on a quart of blackberries or a bushel of peaches, and where if any one suggested that some attention should be given to the improvement of a public road, or the ornamentation of a window sill by a few geraniums in a tin can, he would be looked down on as a trifler of the meanest possible description. But horticulture to an editor means gardening all over the world—gardening by the fruit-grower, whether of oranges in Florida or cranberries in Cape Cod; by the vineyardist of California or the cocoanut planter of the West Indies; the flower-lover, the tree-planter, the grower and the admirer; the amateur and the professional cultivator; gardening for pleasure and gardening for profit; gardening in short, whatever and wherever found. So there are some localities which send us horticultural reports which treat of things wholly from the open air, and there are reports from countries where the best gardening is that which records a triumph over hard-hearted stony nature, which demands that everything you do shall be in spite of her continual efforts to destroy what you undertake.

Of this latter class is the report before us. Quebec is a province of great cold in winter, and of great heat in summer, and walled gardens, conservatories and greenhouses are in order. Protection is the one word which makes a successful gardener.

So we have here papers on those fruits which require the least protection, and Russian fruits come in for a goodly notice. Many of the best are sketched and described. Trees which may do without much protection, as, for instance, a list prepared for Iowa, gives much valuable information, though not free from some minor errors and oversights. The best kinds of fruits for profitable orcharding are treated of; greenhouses and window gardens get the attention one might expect in a region where the best half of the year we must garden under glass, if at all. It is very interesting reading, on the whole, and aside from this, indicates a prosperous and useful society.

AN ITALIAN EXCHANGE.—Every country is having its especial Horticultural Magazine, either as an individual enterprise, or as the emanation of some public body. Before us we have the *Bulletino della R. Societa Toscana di Orticultura.* The number before us gives an account of a great National Exposition in May last. Orchids, palms, yuccas, ferns and leaf plants generally seem to be the most popular plants exhibited, though pelargoniums in their various sections, rhododendrons and azaleas, roses, 150 varieties by one exhibitor, and some other things, received attention. There are descriptions of fine gardens, and among other items of interest an account of the doings of a society established to prevent tourists from utterly rooting out rare botanical specimens.

AGRICULTURAL, BOTANICAL AND CHEMICAL RESULTS OF EXPERIMENTS ON THE MIXED AND PERMANENT MEADOW. By Drs. Lawes, Gilbert, and M. T. Masters. Published by the Royal Society of London.

This is the botanical portion of this wonderful work, undertaken by these painstaking experimenters. The grass land was left twenty years in sod, and the changes which occurred by the use of peculiar manures, peculiar seasons, peculiar soils, or peculiar circumstances of any kind, were carefully noted. The different species of grass in the meadow at the commencement, perhaps the same at

the commencement of the experiments, varied remarkably at the end of the term, according to the circumstances surrounding it. In damp soil, for instance, one kind would have crowded out the other at the end of the term; in dry soil, the case would be reversed; the damp-soil lover would be crowded out, and the one which dryness suited would prevail.

As a work of scientific interest, which may be made one of vast practical value by reference to it from time to time, no more valuable paper to the cultivators of the soil has perhaps appeared within the century.

THE GOLDFISH AND ITS CULTURE WITH A VIEW TO PROFIT. By Hugo Mulertt, Cincinnati. Published by the author.

Some years ago, when in connection with a daily paper, the writer was called on by a gentleman desiring employment, who gave as one of his merits that he could write able articles on any subject, and the less he knew about the subject the better would be the articles that he could write. This may be all right, but we prefer writings by those who are familiar with their subjects; and therefore at the outset we are prepared to welcome a book on this subject by Mr. Mulertt, because the writer has pleasant recollections of a visit to Mr. Mulertt's establishment some years ago, and how well he succeeded in making everything do well.

There are few more interesting occupations than the care of pets in the shape of living creatures about the house, and of all these pets the goldfish is one of the most interesting. But those who do not know how to manage them soon find the fish diseased, or in some other way fish-caring becomes annoying. This work is intended to look into the subject of "profit;" but it is just the little things desirable for profit that make the successful amateur, and we can cordially recommend this work to all goldfish lovers.

NUTS OF PINUS EDULIS.—In Nevada these are a very desirable article of Indian food. Once in two years the nut crop is abundant, and in early days was the main reliance of the Indians for winter supplies. The work of gathering them is quite tedious; but the patient squaws put in full time during the harvest, and accumulate many sacks full. The cone or bur which contains the nut is pulled from the tree and roasted, the oil or turpentine in the cone being sufficient to partially burn them. This opens the layers underneath which the nuts lie concealed, and from which they are shaken when the roasting process is completed.

SCRAPS AND QUERIES.

TO INTELLIGENT CORRESPONDENTS.—*All communications relating to advertisements, subscriptions, or other business, must be addressed to the publisher, 814 Chestnut Street, Philadelphia.*

All referring to the reading matter of the magazine must be mailed to the editor, Germantown, Pa.

No express packages for the editor received unless prepaid; and marked "Paid through to Germantown, Pa."

AN INDEX VERSUS A TABLE OF CONTENTS.—Last year our publisher gave the Index free to the subscriber, instead of infringing on the usual thirty-two pages of reading matter. We have before us a letter from "An Old Compiler," in praise of that Index, and showing the difference between a mere "contents" and our very full index. We should be glad to insert the whole compliment, if we had room, but must be satisfied with the following extract:

"My purpose, partly, in this writing was to acknowledge the service the GARDENERS' MONTHLY does its readers—and writers, too—by furnishing an annual index that makes the work completely, exhaustively, immediately accessible through its whole series. I am afraid it does not get all the credit it deserves from the majority of its readers for this supplementary labor. I have all the volumes from the first, and bound up to the twenty-fourth, inclusive. I ask my fellow subscribers to examine and test these indices, if they have heretofore accepted them indifferently, confident their verdict will be that they vastly enhance the value of the subscription. I do not find the MONTHLY making any flourish of trumpets—blow—over this accommodation. From its rarity it must be considered gratuitous, and I am therefore moved to acknowledge my own indebtedness. From experience with the MONTHLY up to the last volume I confidently look for another complete index in the approaching December number, unless you have gone and done the unlikely thing this year, of hiring my special aversion, Mr. Contents, in a sudden access of economy."

ADDRESSED ENVELOPES.—We have two cards from correspondents, one of whom advocates addressed and stamped envelopes, on the ground that if the party addressed deigns no reply, he shall not at any rate use their stamp for any other business. To our mind it is worth a three-cent stamp to read some of their letters. There is no accounting for tastes. Those who care for these things can have them.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

EXHIBITORS.—It is remarkable that the best exhibitors at the New York Horticultural Society are professional men. Though there are numerous amateur growers, they seldom exhibit, the reason given being that wealthy employers there sometimes collected and retained the premiums, and gardeners could not be expected to take on themselves the great extra work preparing for exhibition entailed. They are generally over-burdened with routine work.

ENTRANCE FEES.—The committee of the New York Horticultural Society report their surprise that Philadelphia should have asked but twenty-five cents admission fee from non-members, for such a magnificent display.

CHRYSANTHEMUM SHOWS.—These are becoming popular autumn attractions. There was a fine one in Philadelphia during the first week in November. Those which obtained the premiums were sold to a leading clothing house, the price paid being the premium money. The same week there was one in New York, the plants afterwards being sold for the benefit of the Horticultural Society. At Fairmount Park, Philadelphia, thousands thronged to see the collection, and people had to stand in long lines in order to get their turn to enter the large building wherein the flowers were.

THE CHRYSANTHEMUM SHOW IN PHILADELPHIA.—The flower-lovers of Philadelphia have reason to be proud of their first attempt to organize an exhibition wholly of chrysanthemums. The huge hall of the Horticultural Society was completely filled with collections, and the mere variety would fill a large catalogue. It was feared that the exhibits would be confined to commercial men, but two of the largest and best exhibits came from private gardeners, Mr. Stewart, gardener to Wistar Morris, Esq., and Mr. Vallandigham, gardener to G. Bullock, Esq. Their plants were near three feet in height, and nearly as much wide, with healthy leaves from the pot upwards, and crowned by hundreds of perfect flowers. Among the commercial growers Mr. W. K. Harris had the most numerous awards.

The exhibition was particularly interesting as showing that skill was being employed to grow these plants. Of late good plant-growing was fast becoming one of the lost arts. Plants are watered and cared for, doing the best they can of their own accord, and if it ever should enter the grower's mind to exhibit, he looks around a few hours in advance to see if he has anything "worth taking." These plants showed deliberate intent to try and see how well a chrysanthemum could be grown. There is yet room for improvement. Some of the exhibits had more stakes than stems. The effort should be to make good plants by pinching and training, with the smallest possible employment of stakes. Some growers had the plants trained to single stems, and in all cases these had much the finest flowers. If close attention be paid to the skillful management of the plant, we fancy the best specimens of growth could be had from this method. It would be well to offer separate premiums for these different methods of growth. One exhibitor had trained some plants to single stems, and then pinched them to form heads like Kilmarnock willows, fans and other fanciful objects. The flowers were not very good, nor the growth very luxuriant, but the exhibit was very useful and praiseworthy, as showing that much might be done in the way of training when the proper skill shall be brought to play to get the best effects.

A vase of Mr. Evans' "$5,000" rose was exhibited, and proved the rose to be a very meritorious one. It is a tea rose, with all the peculiar merits of General Jacqueminot.

A very fine lot of seedling chrysanthemums from Julius Wolff showed that our own growers are alive to the improvement of the chrysanthemum.

cast upon my intelligence as a florist, until your accomplished contributor, Mrs. M. D. Wellcome, expressed her surprise that the writer of 'Amongst the Flowers' had not seen a Tropæolum canariensis for thirty-five years. Now I would like that you publish this explanation, for I beg to assure Mrs. Wellcome that I have been familiar with the Tropæolum canariensis since my boyhood, and grow it every year in my garden. The plant which I named among the five supposed to be lost plants was the Astragalus canariensis and I can not imagine how the mistake should occur in a publication which shows so much care, ability and knowledge of scientific floriculture as the GARDENER'S MONTHLY. I thank Mrs. Wellcome heartily for her kind attention to the matter and assure her that I admire her taste and love for that beautiful plant, the growing of which to reach perfection does her great credit. I can only express my regret that she lives so far away from Kingston, and promise her that if ever I come within convenient distance of her home I shall take pains to call and enjoy an examination of her beautiful 'Canary Bird Flower,' and convince her of the truth of what I say here."

[The change was made by the editor, in view of the fact that, so far as he knows, there has never been any plant called Astragalus canariensis, so named by botanists. Then the description of this unknown plant seemed to fit the Tropæolum so well, that "Astragalus" came to be regarded as a slip of the pen, on the part of the writer, for Tropæolum. As the matter now stands, it is not clear what this Astragalus can be.—Ed G. M.]

REWARDING INVENTORS.—It is a great pity that only those who invent in mechanical affairs, can profit by a patent right. There are numerous valuable ideas that the world gets hold of, that are just as worthy of recognition from society, but which the world gets and gives nothing for. So far as new fruits are concerned, for instance, the matter has often been ventilated in our columns. No one denies that the discoverer of a good fruit or flower should be well rewarded. Every one knows that too often he gets nothing at all. The difficulty is to find a way by which his right to it should be effectually secured. It is perhaps this want of power to reward, which leads to what often appears to be innocent humbug. A man by careful experiment finds that a certain species of grass is the very best for lawns. If he gives the name of the grass, it is simply worth so much in market, no more. He can get nothing for the good application of the grass, which is the chief value. But why should he not? So he takes another harmless grass, and mixes with the good one, and advertises his "mixture" as the best lawn grass. For this he can get a double price, and he is paid for his idea as well as the actual value of the grass seed. It seems like a fraud, and even Barnum would call it humbug, but the man consoles his conscience by the fact that he is only protecting himself from a public which would certainly take the result of his brain work for nothing if it could. We must leave all this to moralists. The mere reference to it at all comes from a letter from Mr. T. Bennett, of Trenton N. J. He states that he has, and from an excellent paper before us, we believe that he has, made some very useful discoveries in regard to the destruction of insects. He ought certainly to be very well rewarded for his discoveries, but just how it should be done is a question. Some one suggested that he should apply to the Department of Agriculture, and Dr. Loring replies that there has been no specific appropriation from congress for such purposes. It seems a dampening sort of a reply; but Dr. L. could say nothing more.

Perhaps the day may come when congress may establish a fund for rewarding those who make valuable discoveries which cannot be patented, but of which the public gets the benefit. This fund applied under the control of a judicious board of commissioners, would be a very handsome example for America to set.

SELECT PLANTS FOR INDUSTRIAL CULTURE.—By Baron F. Von Mueller. We noted recently, that this very valuable work had been translated into German, in the old world. It is a pleasure to note that our own countrymen are not to be outdone by the intelligent insight of European countries, and that the enterprising publisher, Davis, of Detroit, is about to issue an American edition of the same work. It must be very gratifying to Baron Mueller to find his labors receive this world-wide appreciation, and we have no doubt from the great value the work must be to the American people, its sales will be gratifying to the American publishers.

CREDIT TO THE LATE J. C. LOUDEN.—Lovers of justice to the memory of this great friend and benefactor to intelligent horticulture, will heartily thank Mr. Hovey for his note in another column. At the same time it is but fair to presume that our Cincinnati friends simply omitted to say "in America," which was no doubt all they intended to claim in Mr. Mr. Strauch's behalf.

HORTICULTURAL SOCIETIES.

EDITORIAL NOTES.

NURSERYMEN'S CONVENTION.—The annual meeting of the Nurserymen's Convention was held at St. Louis this year. We were compelled to forego the pleasure of attending. From reports of the proceedings published in the papers, we gather that the meeting was a very interesting and successful one. A. M. Hunt, of Chicago, Ill., was elected President; Franklin Davis, Baltimore, Md., Vice-President; D. W. Scott, Galena, Ills., Secretary, and A. R. Whitney, Franklin Grove, Ills., Treasurer. The next meeting will be held at Chicago, in June 1884.

AMERICAN POMOLOGICAL SOCIETY—NINETEENTH SESSION.—The Pennsylvania Horticultural Society having invited the American Pomological Society to hold its next meeting at Philadelphia, the undersigned give notice that the Nineteeenth Session of this National Association will be held in that city, commencing Wednesday, September 12th, 1883, at ten o'clock A. M., and continuing for three days.

This session will take place at the time of the Fifty-fourth Annual Exhibition of the Pennsylvania Horticultural Society, at Horticultural Hall, Broad near Locust Street.

All Horticultural, Pomological, Agricultural, and other kindred associations in the United States and British Provinces are invited to send delegations as large as they may deem expedient, and all persons interested in the cultivation of fruits are invited to be present and take seats in the Convention. It is expected that there will be a full attendance of delegates from all quarters of our country, and that this will be the largest and most useful meeting ever held by this Society.

The Catalogue of Fruits published by the Society includes nearly all the States and Territories, and is filled with a great amount of information as to the fruits adapted for culture in the respective locations. Some of these are yet incomplete, and it is the object of the Society, from year to year, to fill the blanks and bring its Catalogue nearer to perfection. To accomplish this object as fully as possible, the Chairman of the General Fruit Committee, P. Barry, Esq., Rochester, N. Y., will send out the usual circulars of inquiry.

When we consider the great importance of fruit culture in North America, its rapid progress during the last thirty-five years under the beneficent action of this Society, the great value and rapidly increasing demand for its products at home and abroad, we feel warranted in urging the attendance of all who are interested in the welfare of our country and the development of its wonderful resources in this branch of agriculture.

Arrangements have been made with hotels and some of the railroads terminating in Philadelphia for a reduction of fare. In most cases it will be best for delegations to arrange for rates with the roads in their localities.

A local committee of Reception has been appointed, to whom are confided all matters pertaining to the reception and accommodation of the members and delegates of the Society. The Chairman is Hon. J. E. Mitchell, 310 York Avenue, Philadelphia.

At the last meeting of the Society it was decided in future to encourage general exhibitions of fruits, as well as new varieties or novelties. It is earnestly requested that no duplicates appear in any collection, and that none but choice specimens shall be placed on exhibition. Exhibitors should not fail to give notice as far as possible, at an early date, what room will be needed for their fruits. Six specimens of a variety will be sufficient except in fruits of unusual interest. A limited number of Wilder Medals will be awarded to objects of special merit.

Packages of fruit should be addressed to Thomas A. Andrews, Horticultural Hall, Broad St. Philadelphia, for the American Pomological Society. Freight and express charges should be prepaid.

All persons desirous of becoming members can remit the fee to Benjamin G. Smith, Treasurer, Cambridge, Mass. Life membership, Twenty Dollars; Biennial, Four Dollars. Life members will be supplied with back numbers of the proceedings of the Society as far as possible.

MARSHALL P. WILDER, President, Boston, Mass.
PROF. W. J. BEAL, Secretary, Lansing, Mich.

INDEX.—VOL. XXV.

Aberdeen Park, 355, 356
Abies Douglasii, 305
Abo and Tanyah, 28
Abutilon, Double, 204
Absence of Trees from Prairies, 150
Absorption by Roots, 54
Acacia Farnesiana, 245
" filisina, 148
Acer Schweidleri, 324
" volxemi, 324
Acroclinium, Improv't, 7, 8
Adaptation in Nature, 276
Addressed Envelopes 349,383
Address, Wilder's, 317, 350
Adiantum tetraphyllum gracile, 265
Advantage of Peaches early to Market, 82
Advertisements, 31
Æsculus parviflora, 148
" sinensis, Bunge, 357
Æsthetics, Practical, 94
Agents, Swindling, 26
Agr., Wash'n, Grounds, 324
" Science, Diffusion, 276
Agrippina Rose, Striped, 139
Aiding Draft of Flues, 43, 74
Ailantus glandulosus, 293
Alaska, Ravens in, 340
Albani Carnation, 172
Alexander Peach, 366
Allan, Sir Hugh, Death, 62
Allen, C. L., Grounds, 344
Almond, Dwarf, 341
Alsophila Australis, 294
Alternanthera aurea nana,
Amaryllis, History, 220 [358
Amateurs and Florists, 84
Amelia Peach, 304 [bles, 336
America & England, Vegeta-
" Camellia History, 379
" Cut-flowers, 298
" Forestry in, 17
" Sugar in, 82 [47
American Apples, England,
" Arbor Vitæ, Large, 324
" Banner Rose, 36 [302
" Blackberries, England,
" Crab Apple, 89
" Forester Abroad, 370
" Forestry, 368
" Earth Worms, 53
" Journal Forestry, 350
" Nursery Ass'n, 159, 288
" Peaches, Europe, 15
" Plane Tree, 274
" Plants, Geography, 153
" " Euro. Embargo, 378
" Pomol. Soc., 64, 128, 160, 191, 224, 256, 288, 320, 352
" Trees in Europe, 343
" " Largest, 147
" Violets, Improved, 260
Among Flowers, 161, 166, 198
Ampelopsis, 163
Andromeda japonica, 197, 292
Annual Growth, Wood, 20
" Insect Crop, 214
" Layer, Wood, Pores, 63
Anthurium insigne, 249
Antignon leptopus, 68
Ants, Battles Between, 374
Aphelandra punctata, 202,
Apple & Pear, Best, 367 [203
" Blossoms, Bridal, 363
" Butter, 302, 380
" Crab, American, 89
" Fungus, 272
" La Fameuse, 272
" Lord Nelson, 45
" on Pear, Grafting, 115
" Pyle's Red Winter, 114
" Schoolmaster, 113
" Stocks, Budded, 84
" York, Imperial, 272
Apples, American, Eng'd, 47
" as Food, 271
" Eastern Pa., Best, 366
" for Export, Packing, 302
" Hardy, 272
" " Ohio, 15
" Mexico and Texas, 300
" Two Good, 267
Apricots, So. Cal., 238 [184
April, Rooting Carnations,
Aquilegias, Crossing, 278
Araceous Plants, Hybrid, 182
Arad, Interesting, 248
Arboretum, Derby, 70
Arborvitæ, Am'n, Large, 324
" Name, 152
Arctic Region, Pine from, 54
Arizona, Potato in, 347
Arkansas, Catalpa speciosa in, 338
Arnold Arboretum, Rep't, 96
Arrestors, Spark, 51
Art in Cabbages, 217
Arums, Creeping, 214
Ash as Street Tree, 101
Asparagus, Crossed, 55
" Plants, Strong, 114
Aspen, Habits of, 51
Asphalt Walks, 198
Astragalus Canariensis, 286
Athol, Duke of & Trees, 179
Audibertia polystachia for Bees, 242 [222
Australian Plants, Census,
Austrian Pine, Varieg'd, 358
Autumn Bearing Raspber-
" Roses, 133 [ries, 47
Azalea, Miss Buist, 13
" Mollis, 164, 292
Azaleas, Early Blooming, 137
Bacteria, 112, 188
" Remedies, 113
Bad Seeds, 46
Bad Setting Grapes, 276
Bag or Sac Worm, 37, 292
Bananas, Forests of, 305
Banded Rush, 309
Barbed Wire Fences, 177
Bark, Tannin, Trees U. S., 85
Barry, P., Portrait, 26
Barry's Fruit Garden, 316
Battles Between Ants, 374
Bearing Pear Tr's, Early, 178
Beauty in Birds' Nests, 25
" of Yellow Pine, 370
Bedding Clematis, 101, 280
" Pansies, 229
" Plants, Two new, 69
Beds, Flower, 99
Beech Forests, 336
Bee-Keeper's Manual, 222
" Keeping Perils, 226
" Plant, Good, 242
Bees and Honey, 216
Beetle, Elm, 298
Beet Sugar Discoverer, 216
" Wine, 14
Begonia Davisi, 138, 234
" Double, 120
" Hofgartner Vetter, 126
" Socratina, 22
" Weltoniaensis, 236
Begonias, Winter fl., Cult. 188
Berkeley, Cal., U. Gardens, 315
Berries, Hollies & their, 358
Best Apples, East'n Pa., 366
" Food, Dyspeptics, 334
" Plums to Plant, 335
" Portion, So. Calif., 208
" Strawberries, 333
" Time, Planting, 260
" Tomatoes, 301
Biennial fl. Orchids, 250
Bilbergia thrysoidea, 261
Birch, Black, 273
" Purple, Origin 187
Birds, Epicures among, 374
Bird's-foot Violet, Range, 311
" Nests, Beauty in, 25
" " Defence in, 53
" " Handsome, 54
Blackberries, American in England, 302
" Improved, 176
Blackberry, Early Cluster, 367
Black Birch, 273
" Jack Oak Wood, 147
Blight, Pear, 111
" " Inquiry, 332
Blistered Leaves, Greenhouse Plants, 106
Blooming, Rhododendrons not, 196 [ly, 137
" Seedling Azaleas, Early
Bloomsdale Pearl Onion, 242
Blossoms, Apple, Bridal, 363
Blue Gum in Florida, 338
Boardman's Tree Paint, 49
Bones, Waste in Cities, 47
Bon Silene Rose, White, 363
Borer, Currant, 366
" Locust, Ohio, 146
Boston City Forester, 357
Botanic Apartm'ts, Cornell University, 150 [pit, 310
Botany & Horticulture, Pul-
" Lower California, 214
" Nomenclature, 315
" Texas, 311
Bottling Fruit, 120
Boundaries, So. Calif., 207
Bouvardia, A. Neuner, 13
" D'bl White in Europe,
Bouvardias, 7 [108
" New, 76
Bowiea, volubilis, 89
Boxes, Layering, 145
Box Forests, 179 [to, 143
Break Land in Spring, When
Brice's Early Peach, 272
Bridal Apple Blossoms, 363
British Control, Timber, 273
Brown, Wm., Death of, 255
Budded Apple Stocks, 84
Budding Peach Trees, 116
Buffalo Nat. Field Club, 158
Bureau, Prof. Ed., Paris, 350
Burk, Wm. G., Death of, 222
Burning Coke, Rules, 139
" Forests, Railroad, 179
Business, Gardening, 59
" Success in, 271
Butter, Apple, 302, 380
Butterfly, Cabbage, 48
Cabbage & other worms, Destroying, 110, 209, 242, 302
" Art Produce, 217
" Butterfly, 48
" Profit on, 115
" Worm, 304
Cabbages, Poison on, 153
Cactuses, Hardy, 121
Cactus Hedges, 70
Caladium esculentum, 14, 120
California, Date in, 241
" Fig Culture, 241
" Forestry, 338
" Grape Convention, 224
" Lower, Botany, 214
" Need of, 141
" Peaches, 271
" Peach Root Disease, 335
" " Trees, Disease, 240
" Pear, Good, 367
" Walnut, 271
" Seedling Pears, 49
" So. Fruit Cult., 206, 236
" Viticult. Rep., 158
Calopogon pulchellus, Fertilization, 19
Calycanthus, Fruiting, 278
Camassa esculenta, 276
Camellia C. M. Hovey, 202
" in America, Hist'y, 379
Camellias and Roses, 43
Campbell Plum, 83
Camp Life Pleasures, 125
Camptosorus rhyzophyllus, 149
Canada Gov't. Grounds, 34
" Tithes in, 28
Canadian Lumber, 146
Canals & Railroads, Free, 30
Canker Worms, Inquiry, 116
Canna Ehmanni, 37, 38, 98
Canning Tomatoes, 210
Can Wheat be Cross-fertilized, 19 [chonas, 221
Cape de Verd Island, Cin-
" Horn Expedition, 214
Caragana, 157
Carnation Albani, 172
" from Po'keepsie, 108
" Garfield, 39
" Yel. Winter, 204, 364
Carnations, Growing, 76
" Frame Culture, 295
" in April, Rooting, 134
" Seedling, 43 [328
" Winter Fl., Disease,
Carolina Raspberry, 366
Caroline Goodrich Rose, 108
Carpet Bedd'g, Glenville, 354
Carrot, Col'd Flowers in, 21
Castillija coccinea, 149
Catalogues, Trees in, 139
Catalpa, Hardy, 85
" speciosa, Growth, 180
" " in Ark., 338
Caterpillar, Cabbage, 209
Caterpillars, Grape Vine, 365
Catherine Mermet Rose, 171
Cats in Bombarded Cities, 187
Catskill Mountain Plants, 120
Cattleya Mossæ, 328
Cauliflower Roots, Grubs, 365
Celeriac, Tricolored, 48
Celery and Onions, 83
" Culture, 13, 79
" Large, 47
Cemeteries and Landscape Gardening, 285
Cemeteries, Chinese, 260
Census Forestry Rep., Va. 18
" Australian Plants, 222
Centaurea Americana, 149
Centenaris des Camoens Rose, 5
Cercis Canadensis, 230
" Japonica, 164
Champagne, 254
" Grapes, 254 [219
Character of Nurserymen,
Charleston Fruits, &c., 177
Cherry Currant, 175
" Trees in Japan, 114
Chestnuts, French, 172
Chicago Florists' Houses, 30
" Flowers in, 107
China, Forest Destruction,
" Fuel in, 245 [213
" Roads and Travel, 5
" Trees, Timber, 147
" Tulip Tree in, 218
Chinese Cemeteries, 260
" National Flower, 93
" Peaches, Flat, 115
" Primula, New, 43
Chrysanthemum, Mayw'd, 43
" at Fairmount Park, 10
" Mrs. Dr Vertres, 133
" Shows, 384
Chrysanthemums, 71
Cinchona, 333 [Islands, 221
Cinchonas, Cape de Verd
Circulation, Hot Water, Old Time, 220
Cities, Waste Bones in, 47
City Forester, Boston, 357
" Smoke, 54
" Squares, Phila., 36, 164
" Trees, Hope for, 100
" Yards, Grape Vines, 334
" " Peach Trees, 335
Clapp's Favorite Pear, 241
Clearing Gr'ds, Stumps, 246
" Weeds from Walks, 70
Clematis, Bedding, 101, 280
" Coccinea, 259
" Disease, 323
" Propagation, 358
" Seedling, 280
Clematises as Isolated Specimens, 131 [354
Cleveland, O., Carpet Beds,
Climbing Plants, 168
Climates, Favored, 250
Climate, So. Cal., 207
Clitora cœrulea, 68 [75
Coal Oil Lamps, Heating by,
Codling Moth, 80
" " Larvæ, 152
Coffee, New Kentucky, 216
Coke, Rules for Burning, 139
Coleus, Improving, 325
" Mealy Bug on, 39
" Seedling, 266 [of 125
Collectors, Plant, Dangers
Colorado as an Ag. State, 95
Colored Flowers in Carrot, 24
Colors of Flowers, 342
Columbia Grape, 302
Commencement of Cultivation, 221
Commerce, Currant of, 240
Committees, Work of, 349
Common Names, Plants, 340
Competing for Prizes, Present System, 32 [Size, 160
Competition Pots, Limiting
Concerning Figs, 217
Conger Danl., Tallest, 187

Coniferæ Hedges, 70 [37
Coniferous Trees in Spring, Conn., Pteris tremula in, 342
Conservatory, The, 350
Contents versus Index, 383
Convention, Cal. Grape, 224
" Nurserymen's, 159,288
Cornell Univ., Bot. Dep't, 150
" " Greenhouses, 138
Corn, Indian, Travels of, 30
" Green, 83
" Sugar in, 210
Cornus alternifolia, 258
Correspondents' Inquiries 96
Cost, Steam Heating, 9
Cotton Plant, Hybrid, 23
" Plants, Variation, 54
" Substitute for, 47
Covering Strawberries, Win-
Coxcomb, Large, 39 [ter, 301
Crab Apple, American, 89
Cracking of Pears, 241 [298
Cramoisi Superieur, Rose,
Cratægus brachycantha, 37, 148
Credit to J. C. Louden, 287
Creeping Arums, 214
" Hydrangea. 324
Cresses, Water, Grow'g, 303
Crested Ferns, New, 197
Crinodendron Hookerianum, 108, 109
Crooked Timber, Value, 273
Cross Breeding Wheat, 52
" Fertilization, Fruit, 274
" Fertilize, Can Wheat, 19
Crossed Asparagus, 55
Crossing Aquilegias, 278
" Pears, 272
Croton Cronstadtii, 277
" elegantissimus, 329, 330
" Leaves in Flower Glass-
Crucknell, Chas., 94 [es, 108
Cucumbers, Improved, 48
" Old World, 241
Cultivated Plants, Origin, 188
Cultivating Japan Lily, 229
Cultivation, Beginning, 221
Cultivator, Feast's Scuffle, 17
Culture, Celery, 13, 79
" English Ivy, 259
" Fruit Trees, 82
" Hardy Grape, 81
" Orange, Florida, 301
" Carnations, France, 295
" Rose, Summer, 66 [145
" Strawberry, Garden,
" Strelitzia regina, 74
" Winter Begonias, 138
Cumorah Hill, The, 94
Curculio, Pacific Coast, 333
Curcuma Roscœana, 108
Curl, Peach Leaf, 375
Currant, La Versaillaise and Cherry, 47, 175
" Borer, 366
" of Commerce, 240
Currants, Russian, 175
Cut Flowers, America, 298
" " France, 108
" " Packing, 328
Cyclamens Under Trees, Hardy, 101 , [reum, 184
Cypripedium Albo-purpu-
Cypripediums, 167

Daffodils, Failure in, 100
Dahlias, Queries, 324
Dahlias, Single, 5, 68
Daisies, Warfare on, 125
Dandelion, Rum, 47
" Salad, 210 [125
Dangers, Plant Collectors',
Danville, Ill. Greenhouses 380
Daphne Gwenka, White, 229
Darley Dale, 27
Date in California, 241
Datura arborea. 6
Daubertonia Tripetiana, 325
Dayton Soldiers' Home, 289
Dead Branch Evaporation, 52
" Wood on Trees, 374
Death, Allen, Sir Hugh, 62
" Brown, Wm. 255
" Burk, W. G., 222
" Elder, Walter, 158
" Ellis, John, 94
Death, Ellwanger, H. B., 286
" Glover, Townsend, 350
" Johnson, Jos. E., 62
" Kinsey, Saml, 255
" Little, Jas, 350
" Muller, Herm'n, 350
" Ott, Chas. B., 315
" Parker, Chas. F., 380
" Peters' Geo., 189
" Sherwood, Jno., 189
" Slater, Jno. W., 94
" Smith, Dan'l, 350
" " Dan'l B., 158
" Strauch, Adolph, 190
" Warder, John A., 286
Decorated Napkin Rings, 169
Decorations, Floral, Origin,
" Greenhouse, 200 [243
Defence in Birds' Nests, 53
Degeneracy of Strawberries, 145, 175
De Niedman, V., 125
Denison, Tex., Hort. Soc., 256
Derby, Arboretum, 70
Destroying Cabbage & other Worms, 110, 209, 242, 302
" Insects, Hellebore, 239
Destruction, Tree, China, 213
" Forest, Mississippi, 178
" Insects, 332
" Native Plants, 214
" Rare " 214
Destructive Grub, 364
" Insects, 81 [121
Desultory Notes, Dog Rose,
Deutzia gracilis, for Pot Culture, 135
Dew, Honey, 56
Diamond Tuberose, 10, 41
Dieffenbachia amœna, 76, 77
" Carderi, 11
" Leopoldii, 12
Diffusion Agri. Science, 276
Diplandia carissima, 234, 235
Director, Plants Garden, Paris, 350
Discoverer, Beet Sugar, 216
Discovery Textile Fibres, 89
" of Potato, Arizona, 347
Discriminative Premiums, 32
Disease, Clematis, 323
" from Reeds, 278
" Peach, New, 15
" " Trees, Cal., 335
" " Root, Cal., 335
" Winter fl. Carnations, 328
Distribution, Wh. Spruce, 376
Dog Rose, Grafting Grape
" " Notes, 121 [on, 181
" Tooth Grass, 376
Double Abutilon, 204
" Begonia, 120 [13
" Bouvardia, A. Neuner,
" " New, 76
" " white, Europe, 108
Double Escholotzia, 38
" Flowers, 120, 266
" Gloxinias, 18
" Heliotrope, 214
" Honeysucle, 292
" Lilium auratum, 292
" New Life Geranium.
" Peach Leaf, 311 [172
" Tropæolum, 53
" Tuberoses, 164
Dracæna Goldieana, 296
Draft Flues, Aid, 43, 74, 263
Drink from Eucalyptus, 372
Dropmore Flower Garden, 34
Drop Worm, 292
Drying Fruits, 241
Dry Season, So. Cal. 208
Durand's Oak, 89
Duration, Railroad Ties, 306
" Timber, Variability, 147
Duthie Park, 355, 356
Duties, Mahogany and Rose-
Dwarf Almond, 341 [wood, 51
" Pears, Planting below
" Stevia, 292 [Graft, 113
Dyeing Fresh Flowers, 368
Dyspeptics' Best Food, 334

Earliest of All Pea, 17
" Peaches, Texas, 15, 211
Early Bearing Pears, 178
" Blooming Azaleas, 187
Early Cluster Blackberry, 367
" Fruiting Walnut, 16
" History, Garden Flowers, 61
" Peaches, New, 267
" " Unsatisfactory, 239
" to Market, Peaches, Advantage, 82
" Peach, Hale's, 366
Earthworm, The, 340
Earthworms, American. 53
East, Our Trip, 345
Easy Culture, Orchids. 328
Echinocactus Sileri, 309
Economical Insecticide, 239
Eddoes, alias C. Esculentum,
Editor's Journey, 285 [120
" Letters, 251. 278, 281, 312
Eglantine Rose, 29, 226
Egyptian Lotus, Hardy, 130
Elder, Walter, Death, 158
Electric Light Growing, 115
Elevations, Peach, 115
Ellis John, Death, 94
Ellwanger, H. B., Death, 286
" H. B., Tribute to, 314
Elm Beetle, 293
Embargo, Amer. Plants, 378
Endive, Red-leaved, 82
Engleman, Dr. Geo., 316, 349
England, Am. Apples in, 47
" Am. Blackberries in 302
" and Amer. Vegetables,
" Forestry in, 305 [336
" Strawberries in, 144
" Timber Trees in, 245
English Gooseberries from Seed, 304
" Ivy Culture, 259
" Sparrow, 223
Enormous Fruit, 219
Ensilage, Mexico, 272
Entrance Fees, 384 [383
Envelopes, Addressed, 349,
Epicures among Birds, 374
Erica Cavendishii, 202 [61
Errors, Typographic & Mss.,
Eryginum Leavenworthii, 148
Escholotzia, Double, 38
Etoile de Lyon Rose, 108, 171
Eucalyptus as Febrifuge, 338
" Drink from, 372
" in Florida, 245
" of Future, 156
Eucharis, 296
Euonymus japonicus, 204
" radicans, 6, 71
Euphorbia marginata, 149
Europe, Amer. Peaches in, 15
" Dbl. White Bouvardia
" Larch, in, 273 [in, 108
" Prohibition American Trees, 343
" Strawberries in, 144
Evaporation from Dead Branches, 52
Evergreens and Lawns, 133
" Hardiness of 186
" in Shade. 101
Evolution, Mysteries of, 310
Exaggerated Introductions, New Fruits, 141, 156
Exhaustive Melons Not, 176
Exhibitions, Prem's at, 64
" Size of Flower Pots, 296
Exhibitors, 484
Experience, Phylloxera, 79
Experiments, Meadow, 382
Export Apples, Packing, 302

Facts, Steam Heating, 200
" New Wanted, 284
Failure, Maple Sugar, 216, 274
" Narcissus & Daffodils, 100
Fairmount, Chrysanthe-
" Park, 5 [mums at, 10
" Park Lectures, 248
Falconer, Wm, 350
Farming, New England, 82
Fashion in Decorations, 234
Favored Climates, 250
Favorite Tomato, 48
Feast's Scuffle Cultivator, 17
Febrifuge, Eucalyptus as, 338
Fees, Entrance, 384
Female and Male Flowers, 21
Fence Posts, Inverting, 305
Fences, Barbed Wire, 177
Ferns, Forking of, 87
" New Crested, 197
" of U. S., 340
Fern, Walking, 149
Fertilization by Insects, 55
" Calopogon pulchellus, 19
" of Wheat, 86
" of Yucca, 118
Fertilizing Moss, 31, 128
Few Rare Plants, 257 [ing, 187
" Remarks, Steam Heat-
Fibres, Textile, Discovery
Ficus sycamorus, 29 [in, 89
Fig Culture, Cal., 241
Figs, Concerning, 217
" in Old World, 209
Figures, Forest Planting, 246
Fine Old Judas Tree, 100
" Pansies, 132
" Seeds, Raising, 43
" Tuberoses, 323
Fire Proof Paint, 273
Fires, Forest, 211, 213, 243
" Forests Succeeding, 117
Fir, Silver, Large, 306
" Tree Oil, 43
Flat Chinese Peaches, 115
Flax in Mexico, 17
Floods and Forests, 178
Floral Cabinet, 30
" Decorations, Origin, 234
Florida, Blue Gum in, 338
" Eucalyptus in, 245
" Orange Culture, 301
" Oranges & Weather, 25
Florists and Amateurs, 64
" Houses, Chicago, 30
Flower Beds, 99
" Chinese National, 93
" Garden and Pleasure Ground, 1, 33, 65, 97, 129, 161, 193, 225, 257, 289, 321, 353
Flower Gard'n, Dropmore, 34
" Gardening Notes, 68
" Glasses, Croton Leaves in, 106
" Pots, Exhibitions, Size of, 296
" Seller, London, 377
Flowering Victoria Lily, 261
" Vines, Summer, 67
Flowers, Among, 161, 166, 193
" Colors of, 342
" Cut, Packing, 328
" Double, 120, 266
" Dyeing Fresh, 363 [55
" Fertilization by Insects,
" Garden, Early History,
" in Chicago, 107 [61
" in North Windows, 71
" Insects on, 107
" Male and Female, 21
" Out of Season, 311
" Popular Love, 234
" Sexes and Heat, Relation, 24, 248
" Specimen, 219
Flue, How to Clean, 264
Flues, Draft, Aiding, 43, 74,
Food, Apples as, 271 [263
" Best for Dyspeptics, 334
" of the Indians, 151
" Varied Tastes in, 60
Force of Habit, 187
Forcing Tomatoes, 368 [213
Forest Destruction in China,
" Destruction, Miss., 178
" Fires, 211, 213, 243
" Public, in N. Y. State, 85
Forester, Amer., Abroad, 370
Forestry, 17, 50 84, 117, 146, 178, 211. 223, 243, 273, 305.
" Bulletin, 95 [336, 368
" California, 338
" England, 305
" in America, 17
" Laws, 50
" Legislative, 370
" Planting, Figures, 246
" Practical, 84
" Rep't, Va., Census, 18
" St. Paul, 306
Forests, Banana, 305
" Beech, 336
" Box, 179

Forests, Floods and 178
" Kansas, 180 [roads, 179
" Responsibility of Rail-
" Seeds and Plants for, 50
" Spare the, 178
" So. Australia, 50
" Succeeding Fires, 117
" Sunken, 217
Forking of Ferns, 87
Formic Acid and Honey, 54
Forsythea suspensa, 165
Foretelling Weather by White Pine, 24
Fragrance of Abies Douglassii, 305
" of Gardenia, 40
Frame, an In-door, 40
France, Cut Flowers in, 108
" Perpet. Carnations, 295
" Phylloxera in, 46
Francis B. Hayes Grape, 335
Frauds, 228
Free Lumber, 146
" Railroads and Canals, 30
French Chestnuts, 172
" Roses, New, 298 [309
Fresh Water Sponges, 307,
Frogmore Vege. Garden, 302
Fruit and Veg. Gardening, 13, 44, 78, 110, 141, 172, 205, 236, 267, 300, 331, 364
" Bottling, 120
" Cross-fertilization, 274
" Culture, S. Cal., 206, 236
" Enormous, 219
" Farms, N. Y., Value, 366
" Garden, Barry's, 316
" Gardens, Odorous Hedges for, 205
" Growers' Ass'n, Ontario in Mexico, 210 [rio, 315
" Notes in 1882, 46
" Thinning, 176
" Trees, Culture of, 82
Fruiting a Lemon Tree, 139
" Kieffer Pear, 114, 334
" of Calycanthus, 278
" Walnut, Early, 16
Fruits and Trees, Notes, 142
" and Vegetables, Charleston, 177
" for So. Cal., 209, 238
" Insect Injury, 222
" Kansas, 304 [156
" New, Introducing, 141,
" Objected Names, 157
" Preserving, Drying, 241
" Seedling Raising, 116
" Wonderful, 367
Fuchsias, Soil for, 40
Fuel in China, 245 [272
Fungus on Fameuse Apple,
" on Pea, New, 185
Future Wood Supply, 117

Garden Culture of Strawberry, 145 [302
" Vegetable, Frogmore,
" What is a, 93
Gardener's Note, A Young, 93
Gardeners' Monthly 1883, 96
" " Influence, 150
" Qualifications, 344
" Young, Improvement in, 96, 155
Gardening and Business, 59
" for Young and Old, 94
" Kansas, 218
" New Orleans, 177
" Notes, 4, 294, 297
" Window, 359
Gardens, Berkeley, Cal., 315
" Fruit, Odorous Hedges for, 205
" Ridding of Moles, 211
Gardenia, Fragrance of, 40
Garfield Carnation, 39
Garrya Elliptica, 261
Geographical Range, Bird's-foot Violet, 311
Geography, Amer. Plants, 153
Geologist, N. J., Report, 188
Georgia Hort. Soc., 64, 256
Geranium, New Life, 172
" Zonale, Little Gem, 304
Geraniums, Seedling, 204
" Training, 328
Germantown Telegraph, 316
Giant Horse Tails, 60
Gidding's Greenhouses, 380
Gilia cornopifolia, 148
Gingko, 101
" Tree, Long Island, 101
Gladioli from Seed, 197
Glasnevin, Todeas at 265
Glasses, Croton in, 108
Glass, M. Niel under, 70
Glenville Carpet Beds, 354
Gloxinias, Double, 13
Gloxinia Seed, 202
Glover, T., Death of, 350
Glucose, 185
Goldfish and Culture, 383
Good Apples, Two, 267
" Bee Plant, 242
" California Pear, 367
" Keeping Plums, 49
" Greenhouse Plants, 41
" Orchids, Sept., 328
" Peas, 48
" Potatoes, 83
" Pot Plants, 326
" Rose, 41
" Strawberries, 333
" Summer Pear, 365
" Vegetables, 114
Gov't Grounds, Canada, 84
" Officials, 379
Graft, Dwf. Pears, Planting below, 113
" Influence of Stock and Reverse, 173
Grafted Rose, 164
" Roses on Manetti, 164
" Tomatoes, Tubers, 23
Grafting Apple on Pear, 115
" Grape on Dog Rose, 181
" Pears on Hawthorn, 116
" Roses, 132
" " Stock for, 292,
Grammatical Query, 127
Grape, Black Eagle, 46
" Brighton, 46
" Columbia, 302
" Duchess, 46
" Francis B. Hayes, 335
" Growers, Cal., 224
" Hardy, Culture, 81
" History of, 221
" Jefferson, 46
" Lady Washington, 46
" Moore's Early, 46
" New Tuberous Root, 366
" Pocklington, 46
" Prentiss, 46, 176
" Tendrils, Removing, 248
" Vine on Dog Rose, Graft, 181
" " Prolific, 304 [365
" Vines, Caterpillars on,
" " City Yards, 334
Grapes, Bad Setting, 276
" Champagne, Gathering,
" So. California, 237 [252
" White, 29
Grass, Dog-tooth, 376
" The Holy, 375
" Zebra, 229
Gray, Dr. Asa, 27
Gray's Synoptical Flora, 316
Great Pear Exhibit, 333
" Planter of Trees, 179
Green Corn, 88
Greenhouse and House Gardening, 6, 38, 71, 102, 134, 166, 199, 231, 261, 294, 326, 359
" Decorations, 200
" Plants, Blistered, 106
" " Good List, 41
" Small Heating, 204
Greenhouses, Cornell, 188
" Giddings', 380
" Heating, 107, 232, 327
" Large, 40
" Steam Heating, 39, 102
" Grounds, Wash'n, 324
" C. L. Allen & Co., 344
Growing Carnations, 76
" Hedges, 194
" Peach Elevations, 115
" Water Cresses, 303
Growth & Wet Weather, 54
" Annual Wood, 20
Growth by Electric Light, 40
" Catalpa speciosa, 180
" Spiral, 52
" Trees in Catalogues, 139
Grub, Destructive, 364
" Cauliflower Roots, 365
Gum, Red, 305
Gwenka, White Daphne, 229
Gynura, auriantiaca, 298

Habitats of Plants, 87
Habit, Force of, 187
Habits, Am. Earthworms, 53
" Aspen, 51
Hackberry as Street Tree, 260
Haggerty, Jas., Notice, 57
Hale's Early Peach, 366 [192
Hall of N.Y. Hort. Soc., 32, 64,
Handsome Bird's Nests, 54
Hardiness & Temperature, 24
" of Evergreens, 186
Hardy Apples, 15, 272
" Aquatics, 357
" Cactuses, 121
" Catalpa, 85 [101
" Cyclamens under Trees,
" Egyptian Lotus, 180
" Grape Culture, 81
" Raspberries, 141
Hawthorn, Graft Pears on,
Hawthorns, 37, 57, 96 [116
Heat and Sexes, 24, 248
Heaters, Steam, 298 [75
Heating by Coal Oil Lamps,
" by Hot Water, 75, 262
" by Lime Water, 71
" Facts, Steam, 200
" Greenhouses, 107, 232, 237
" " Small, 204
" " Steam, 32, 102
" Plant Houses, 73, 168, 204
" " Rooms, Small, 204
" Steam, 76, 102, 107, 137, 138, 166, 168, 199, 231, 295
" Steam & Hot Water, 72
" " Discussions, 380
Hedges, Cactus, 70
" Coniferæ, 70
" Fruit Gardens, 205
" Growing, 194
" Steel wire, 177
Heliotrope, Double, 204
" Roi des Noirs, 328
Heliotropism in Sun Flowers, 54
Hellebore for Insects, 239
Henry Bennett Rose, 376
Hepaticas, Improved, 229
Herbaceous Plants, Raising Seeds, 101
Herminie Groshoff, Dbl. Tropæolum, 53
High Priced Rose, 266, 376, 380
Hill, Cumorah, The, 94
Hints, New, Rare Plants, 263
" Seasonable, 1, 6, 38, 38, 44, 65, 78, 321, 326, 331, 359, 364
History, Amaryllis, 220
" Camellia, America, 379
" Grape, 221
" Potato, 122 [120
Hofgartner Vetter Begonia,
Hollies and Berries, 358
Holy Grass, 375
Honey and Formic Acid, 54
" Bees and, 216
" Dew, 56
Honeysuckle, Double, 292
Honors, Pomological, 315
Hooker, H. E. & Co., 315
Hooker, H. E., Memorial, 186
Hope for City Trees, 100
Horn, Cape, Expedition, 214
Horse Tails, Giant, 60
Horticultural Acrostic, 26
" Directory, London, 68
" Exhibitions, Prem's, 64
" School, Western, 347
" Societies, 32, 64, 128, 159, 160, 191, 224, 256, 288 317, 350, 384
" Soc., Reports of, 14
" Soc'y, Denison, Tex., 256
" " Ga. State, 64, 256
" " Mass., 31
" " Mich., 256
" " Miss. Val., 160, 192
Hort. Soc'y, Montreal, 382
" " N.Y., 32, 64, 128, 192
" " Pa., 128, 192, 224, 320
" " State, 30, 32
" " Texas, 160
" " Worcester county, Mass., 188
Horticulture in Spain, 219
" Pulpit, 310
Hot Water and Steam, 72
" " Better than " 262
" " Circulation, Old Time, 220
" " for Insects, 169, 202
" " Heating Notes, 75
" " Sickly Plants, 171
Hour at Lorillard's, 252
Hovenia dulcis, 358
Hovey, C. M., Camellia, 202
How to Clean a Flue, 264
Hybrid Cotton Plant, 23
" Pear, Kieffer's, 46, 84, 209
" Silk Moth, New, 152
Hybridizing Araceous
Hybrids, 184 [Plants, 182
Hydrangea, Creeping, 324
" paniculata grandifl., 293

Illinois, Peaches in, 176
Importance of Am. Pom. Socy, 351
Improved Acroclinium, 7, 8
" Blackberries, 176
" Cucumbers, 48
" Hepaticas, 229
Improving Coleus, 325
" Lawns, 325
Improvement, American Violets, 260
" Persimmon, 45, 84
" Young Gardeners, 96, 155
Impossibilities Possible, 276
Index versus Contents, 383
Indians, Food of, 151
Indoor Frame, An, 40 [242
Industrial Plant, Sunflower,
" Schools, 30
Influence, Gardener's Monthly, 156
" Stock on Graft and Reverse, 173
In Memoriam, 317
" " Hooker, H.E., 186
Inquiries, Correspondents, 96
" Various, 90
Inquiry, Canker Worms, 116
" Pear Blight, 332
Insect Crop, Annual, 214
" Oscillation, Birds on, 62
" Poisons, Vegetables, 206
Insecticide, Economical, 239
Insects, 286
" Destruction of, 332
" Destructive, 81
" Fertilization by, 55
" Hellebore for, 239
" Hot Water for, 169, 202
" Injurious to Fruits, 222
" Lime Water to, 132
" on Flowers, 107
" Orange and Cotton Plant, Experiments, 189
" Tobacco, Water for, 171
" Trapping, 197
Introducing Fruits, 141, 156
Interesting Arad, 248
Inventions, New, 107
Inventors, Rewarding, 287
Inverting Fence Posts, 305
Ipomæa, grandiflora, 68
" Horsfallia, 67
" Insignis, 67
" Michauxii, 68
Irrigation, 113
Is Kalmia Poisonous, 372, 375
Isle of Man, Tree Plant'g, 338
Isolated Specimens, Clematises, 131
Italian Exchange, An, 382
Italy, Letter from, 90
" Seasons in, 89
Ivy, English Culture, 259
" Parlor, 363

James Vick Strawberry, 302
Japan Cherry Trees, 114
" Lily, Cultivating, 229
" Maples, 228, 230, 289

Japan Persimmon, 88, 210
" " in South, 15
" Snowball, 166
" Quince, 328
Japanese Roses, 324
Jean Libaud Rose, 70
Johnson, Jos. E., Death, 62
Jottings, Random, 129
Journey of Editor, 285
Judas Tree, Fine Old, 100
Juglans Præparturiens, 16
July Bloom'g Perennials, 258
Kalmia & Sheep. 89, 372, 374.
Kansas Forests, 180 [375
" Fruits in, 304
" Gardening, 218
" Plants, 148
" Tree Planting, 179
Kentucky Coffee, New, 216
Kieffer Hybrid Pear, 16, 84, 209
" Pear Fruiting, 114, 334
" " Quality, 177, 366
" " Overbearing, 367
Kill Insects, Hot Water, 169,
King, Mayor, Phila., 157 [202
Kinsey, Saml., Death, 255
" Nursery, Dayton, 315
Kitchen Garden Plants, 95
La Fameuse Apple, 272
Land in Spring, When Break, 143
Landscape Gardening, Cemeteries and, 285
Langdon Nurseries, 315
Larch in Europe, 273
Large Am. Arbor Vitæ, 324
" Celery, 47
" Coxcomb, 39
" Greenhouses, 40
" Silver Fir, 306
" Sunflowers, 293 [165
" Trees, Paris Green on,
" Tulip Tree, 370
" Water Pitch Tree, 245
Largest American Trees, 147
Larvæ of Codling Moth, 152
Lastrea Richardii multifida, 88
Latest from Timber-land, 370
" New Strawberries, 16
Laurel Oak, 165, 261
La Versaillaise Currant, 175
Lawns, 194
" and Evergreens, 133
" Improving, 325
Law of Variability, 149 [348
" Postage, Remarkable,
Laws, Forestry, 50
Lawsonia inermis, 25 [63
Layer, Annual, Wood Pores,
Layering Boxes, 145
Leaf Curl, Peach, 375
Leaves, Blistered, 102
" of Marantas, 372
Lectures, Michaux, 248
Leea amabilis, 169, 170
Legal Notes, 155
Legend of the Rose, 29
Legislative Forestry, 370
Lemmon, Mr. and Mrs., 27
Lemon Tree, Fruiting, 139
Leslie, Jas., Notes by, 295
Les Plantes Potageres, 95
Letter from Italy, 90
" M. Vilmorins, 25
Lewis', Dio, Monthly, 316
Lilium auratum, Double, 292
" " Monstrous, 310
" Harrisi, 40, 165
Lily, Japan, Cultivating, 229
" Victoria, Flowering, 261
" Water, New, 43
Lima Bean Roots, Poison, 186
Lime Kiln System, Heat, 71
" Water for Insects, 132
Limiting Size, Competition Pots, 160, 296
Linnæa, The, 340
Liquid Manure, Make, 241
Literature, Travels, Personal Notes, 25, 57, 90, 121, 153, 186, 218, 251, 278, 312, 343, 376
Little Gem Zonale Ger., 364
Little, Jas., Death, 350
Lobb, Wm., 380
Location & Qual., Timber, 245
Locations, Timber Plant, 245
Locust Borer, Ohio, 146
Lombardian Mulberry, 118
Lombardy Poplar, Hist'y, 29
London Flower Seller, 377
" Journal Botany, 60
Longevity of Trees, 371
Long Island Gingko Tree, 101
Lord Nelson Apple, 45
Lorillard's Retreat, 252
Lotus, Egyptian, Hardy, 130
Louden, J. C., Credit to, 287
Love of Flowers, Popular, 234
Lower California Botany, 214
Lumber, Canadian, 146
" Free, 146
Madame Boll Rose, 101
" Gabriel Luizet Rose,
Magnolia stellata, 198 [171
Mahogany, 305
" & Rosewood Duties, 51
" San Domingo, 18
Mail, Trees by, 348
Maize, Travels of, 30
Male and Female Flowers, 21
Management, Tree, 325
Manettia cordifolia, 68
Manetti Rose, 232, 323
" " Origin, 187
" Stock, Roses on, 164
Manure, Liquid, Make, 241
Manures, 178
Maples, Japan, 228, 230, 289
Maple, Silver, Raid on, 219
" Sugar Crop, Failure, 216,
Maranta nitens, 373 [274
Marantas, Leaves of, 372
Marechal Niel under Glass, 78
" " Production, 75
Marggraph, A. S., 216
Marie Louise Pear, 336
Market Gardening, N. O., 177
" " Philada., 288
" Peaches Early to, 82
Marlboro Raspberry, 302
Martin's Amber Wheat, 304
Mass. Hort. Society, 31
Mayor King, Phila., 157 [43
Maywood Chrysanthemums,
Meadows, 382
Mealy Bug on Coleus, 39
Mean Tricks in Trade, 348
Meehan, Edw., 26, 61, 96
Melons not Exhaustive, 176
Memorials, 259
Merv. de Lyon Rose, 171, 264
Mesquite, Value of, 273
Mexico, Apples in, 300
" Ensilage in, 272
" Flax in, 17
" Fruit in, 210
Michaux Lectures, 248
Michigan Hort. Society, 256
" Peach Yellows Law, 15
" State Pom. Soc., 158
Miller and Hunt, 80
Misfortune, Profits of, 348
Miss Buist Azalea, 13
Miss. Forest Destruction, 178
" Val. Hort. Soc., 160, 192
Mistakes, 128
Mist Tree, 70, 323 [234
Modern Floral Decorations,
Moles, Ridding Garden, 211
Monstrous L. auratum, 310
Montg. Co., Kan., Plants, 148
Montreal Hort. Soc'y, 382
More about Steam Heat, 102
Morus multicaulis, 85
Mosses, N. America, 222
Moss, Fertilizing, 31, 128
Moth, Codling, 80
" " Larvæ, 152
" New Hybrid Silk, 152
Motion of Roots, 183
Mount Desert Pines, 85
Mouse Traps, 113
Moving Mountain, 185
Mrs. Dr. Vertres Chrysanthemum, 133
Mulberry, Lombardian, 118
" Russian, 180, 338
" Silk, 370
Muller, Herm., Death, 350
Mushrooms, Poison in, 49
Mushrooms, Poisonous, 147
Mycrococus amylovorus, 112
Myrsiphyllum asparagoides,
Mysteries of Science, 371 [108
Name, Arborvitæ, 152
" Names, Fruits, Objectionable, 157
Names, Plants, Common, 340
" " for, 230, 330
Napkin Rings, Decorated, 169
Napoleon Weep'g Willow, 29
Narcissus, Failure in, 100
National Prosperity, Plants and, 247
" Home, Dayton, 289
Native Plants, Destruct'n, 214
Natural History & Science, 19, 52, 86, 118, 147, 181, 214, 247, 274, 307, 339, 371
Naturalists' Field Club, Buffalo, 158, 316
Nature, Adaptation in, 276
" Variety in, 374
Need of California, 141
New Bedding Plants, Two, 69
" Chicago Florists' Houses, 30
" Chinese Primula, 43
" Crested Ferns, 197
" Disease, Peach, 15
" Double Bouvardias, 76
" Early Peaches, 267
" England Farming, 82
" Facts Wanted, 284
" French Roses, 298
" Fruits, Introducing, 141,
" " Production 351 [156
" Fungus on Pea, 185
" Hawthorn, 37
" Hybrid Silk Moth, 152
" Inventions, 107
" Kentucky Coffee, 216
" Life Geranium, 172
" Orleans Gardening, 177
" " Notes, 4, 294, 297
" or Rare Fruits, 367
" " Plants, 37, 41, 76, 108, 140, 197, 202, 263, 324, 357
" Plum, 367
" Strawberries, 145
" " Latest, 16
" " Raising, 145
" Tuberous Grape, 366
" Water Lily, 43
N. Y. Hort. Soc., 32, 64, 128, 192
" Profitable Peach in, 366
" Public Forest in, 85
" Fruit Farms, Value, 366
Niphetos Rose, 100, 298
Nomenclature, Botany, 315
North American Mosses, 222
" Carolina Pine Lands, 179
Northern Sugar Making, Progress, 141
North Window Flowers, 71
Notes, 131
" by Jas. Leslie, 295
" by the Way, 71
" Flower Gardening, 68
" from Young Gardener,
" Fruits 1882, 46 [62
" " and Trees, 142
" Gardening, 4, 294, 297
" Hot Water Heating, 75
" Legal, 155
" Random, 300
" Sept. & Nov., 291, 375
" Staunton, Va., 36
" Torrington, 2
" Virginia, 163
" Yuccas, 328
Notice of Jas. Haggerty, 57
Novelties, Unworthy, 228, 290
Nursery Business, The, 379
Nurserymen, Character, 219
Nurserymen's Assn., American, 159, 288
Nymphæa flava, 121
" Sturtevantii, 121
Oak, Durand's, 89
" Laurel, 165, 261
" Wood, Black Jack, 147
Obituary, 62, 94, 158, 180, 190, 222, 255, 286, 315, 317, 318, 319, 350, 380
Observations on Yucca, 118
Odontoglossum vexillarium, 41, 42 [Gardens, 205
Odorous Hedges for Fruit
Ohio Hardy Apples, 15
" Locust Borer, 146
Oil, Fir Tree, 43
Oil from Pine, 55 [220
Olden Time, Hot Water in,
Old Fashioned Roses, 157
" Judas Tree, Fine, 100
" World, Cucumbers, 241
" " Figs in, 209
Oleander, 29
Olives, So. California, 238
Onion, Bloomsdale Pearl, 242
Onions and Celery, 83
Ontario Fruit Ass'n., 315
Open Air, V. Regia in, 66
Orange Culture, Fla., 301
Oranges & Weather, Fla., 25
" Tangerine, 49
Orchard, Peach, N. Y., 139
" Pear, Yeomans', 209
" Product So. Cal., 239
" Site " " 208
Orchids, Easy Culture, 328
" Good September, 328
" Native Biennial, 250
" Prize, 41, 330 [188
Origin, Cultivated Plants,
" Floral Decorations, 234
" Manetti Rose, 187
" Purple Birch, 187
" Safrano Rose, 139 [119
" Treeless Prairies, 23,
Osage Orange for Silk Worms, 52
Ott, Chas. B., Death, 315
Our Best Tomatoes, 301
" Trip East, 345
Overbearing Pears, 113, 176
Oyster Bay Peach Trees, 110
Pacific Coast, Curculio, 333
" " Timber, 246
Packing Apples Export, 302
" Cut Flowers, 328
Paint, Fire-proof, 273
" Tree, Boardman's, 49
Palm, Date, California, 241
" Tall, Trouble with, 298
Panax plumatum, 140
Panicum plicatum, 328
Pansies for Bedding, 229
" Fine, 132
Papaver umbrosum, 292
Paris Green on Large Trees,
Park, Duthie, 355, 356 [165
" Fairmount, 5
Parry, Dr. C. C., 94, 316
Pea, Earliest of All, 17
" New Fungus on, 185
Parker, Chas. F., Death, 380
Parlor Ivy, 363
Peas, Good, 48
Peach, Alexander, 366
" Amelia, 304
" Brice's Early, 272
" Disease, California, 240
" " New, 15
" Growing Elevations, 115
" Hale's Early, 366
" Leaf Curl, 375
" " Double, 311
" Orchard, Oyster Bay,
" Peen-to, 115 [110
" Profitable in N. Y., 366
" Purple, 305
" Root Disease, Cal., 335
" Schumaker, 111
" Trees, Budding, 116
" " City Yards, 335
" Yellows Law, Mich., 15
Peaches, Am. in Europe, 15
" California, 271
" Earliest Texas, 15, 211
" Early to Market, Advantage, 82
" " Unsatisfactory, 239
" Flat Chinese, 115
" in Illinois, 176
" New Early, 267
" Precocity of, 304
Pear and Apple, Best, 367
" Blight Inquiry, 332
" Clapp's Favorite, 241
" Exhibit, Great, 333

Pear, Good California, 367
" Grafting Apple on, 115
" Growing, West, 272
" Kieffer, 114, 334, 367
" " Hybrid, 46, 84, 209
" " Quality, 177
" Orchard, Yeomans', 209
" Sand for Stocks, 114
" Seedling, M. Louise, 336
" " Summer, 365
" Tree Blight, 111 [178
" Trees, Early Bearing,
Pears, Cracking, 211
" Cr ssing, 272
" Dwarf, Planting below Graft, 113
" Kieffer, 366
" on Hawthorn, Graft, 116
" Over-bearing, 113, 176
" Quality of, 242
" Seedling, California, 49
" Variations, 271
Pearl Tuberose, 291
Pedigree Roses, 171
Peen-to Peach, 115
Pa., East'n, Best Apples, 366
" Hort. Soc., 128, 192, 224, 320
" State Hort. Soc'y, 30, 31
Pepper Tree, 370
Perennials, July Bloom'g, 258
" Strong-rooted, 100
Perfect Strawberry, 145
Perfume from Acacia, 245
Perils, Bee-keeping, 226
Perpet. Carnation, France, 295
Persimmon Impr'vem't, 45, 84
" Japan, 82, 210
" " in the South, 15
" Seedless, 49
Peters, Geo., Death, 189
Petunia nana compacta, 2
Pharbitis Learii, 9, 71
Philad'a Chrysanthemum Show, 384
" Fairmount Park, 5
" High Priced Rose for, 266
" Market Gardening and Seed Growing, 268
" Mayor King of, 157
" Public Squares, 36, 164
" Truffles in, 210
Phylloxera Experience, 79
" " in France, 46
Physical Features, So. Cal., Picea Cephalonica, 292 [206
Pine, Austrian, Variega'd, 358
" Weather by the, 24
" from Arctic Region, 54
" Lands, N. Carolina, 179
" Oil from, 55
" White, 273
" Yellow, 338, 370
" of Mount Desert, 85
Pinus Koriænsis, 339
Pistillate Strawberries, 144
Plane Tree, American, 274
Plant Collectors' Dangers, 125
" Growing, Elec. Light, 40
" House, Heating Small, 73
" Houses, Heating, 168
" Knowledge, Progress, 24,
" Lattice-leaf, 374 [375
" Life, How Starts, 275
" Room, Heating Small, 204
" Sunflower, Industrial, 242
Planting, Best Time, 260
" Dwf Pear bel. Graft, 113
" Forestry, Figures, 246
" Season, So. Cal., 208
" Suitable Positions, 290
" Timber, Locations, 245
" Tree, Isle of Man, 338
Plants, Am. Geography, 153
" and Shrubs, Rare, 257
" Araceous, Hybridizing, 182
" Asparagus, Strong, 114
" Bedding, Two New, 69
" Catskill Mountains, 120
" Climbing, 163
" Common Names, 340
" Cultivated, Origin, 188
" for Names, 280, 330
" " Starting Forests, 50
" Greenhouse, Good List,
" Habitats of, 87 [41
Plants, Herbaceous, Raising Seeds, 101
" Montg. Co., Kan., 148
" Pot, Some Good, 326
" Potting, 10
" Rare or Native Destruction, 214
" Relation to National Prosperity, 247
" Sickly, Hot Water, 171
" Specimen, 219
" Sub-Tropical, 60
" Variation in, 250
" Window, 78
Pleached Walks, Trees, 298
Pleasant Note, Gardener's, 62
Pleasures of Camp Life, 125
Plum, Campbell, 83
" New, 367
Plums, Best to Plant, 335
" Good Keeping, 49
" in Russia, 176
Podophyllon in Formosa, 372
Poison by Lima Bean Roots, 186
" Vegetable Insect, 206
" in Mushrooms, 49
" on Cabbages, 153
Poisonous, Is Kalmia, 372, 375
" Mushrooms, 147
Polyantha Roses, 324
" " Improved, 162
Polyanthus narcissus, 93
Pomological Honors, 315
Pom. Soc., Am., 64, 128, 160, 191, 224, 256, 288, 320, 352
Pom. Soc., Mich., State, 158
Pomology, Rules of, 350
Poplar, Lombardy, His., 29
" Trees, 133 [France, 108
Popular Cut Flowers, " Love Flowers, 234
" Strawberries, 240
Portlandia grandiflora, 327
Portrait, J. J. Thomas, 348
" P. Barry, 26
Positions, Planting, 290
Possible Impossibilities, 276
Postage, Short, 348
Potato, History of, 122
" in Arizona, 347
" Plants, Tubers, 311
" White Elephant, 17,
Potatoes, Good, 83
Pot Culture, D. gracilis, 135
Pothos aurea, 215
Pot Plants, Some Good, 326
Potting Plants, 10
Po'keepsie, Carnation, 108
Practical Æsthetics, 94
" Diffusion, Ag. Sci., 276
" Forestry, 84
" Absence of Trees, 150
" Timber on, 180
" Treeless, Origin, 23, 119
Precocity of Peaches, 304
Premiums, Discrim've, 32
" Hort. Exhibitions, 64
Prentiss Grape, 46, 176
Preserving Fruits, 241
" Roses, Winter, 293
Primula, New Chinese, 43
Primo Strawberry, 47, 211
Prize Orchids, 41, 330
Prizes, Competition, 32
Production, New Fruits, 351
Productive M. Niel Rose, 74
Profitable Peach in N. Y., 366
Profit in Cabbage, 115
Profits of Misfortune, 348
" Vegetable Cul., Tex., 145
Progress, North'n Sugar, 141
" Nursery Business, 379
" Plant Knowledge, 24, 375
Prohibition, Am. Trees, Europe, 343
Prolific Grape Vine, 304
Pronuba and Prodoxus, 118
Propagation of Clematis, 358
Prosperity, Tex., 46
Prunus triloba, 292
Pteris tremula, 71, 152
" " in Conn., 342
Public Forest, N. Y., 85
" Squares, Philada., 36
Pulpit Hort. & Botany, 310
Purple Birch, Origin, 187
" Peach, 305
Pyle's Red Win'. Apple, 114
Pyrus Japonica, White, 165
Qualifications, Gardeners, 344
Quality & Loca., Timber, 245
" & Soil, Strawberry, 175
" Kieffer Pear, 177
" of Pears, 242
Queries, Dahlia, 324
" Tree Management, 325
Query, Grammatical, 127
Quince, Japan, 323
Raid on Silver Maple, 219 [30
Railr'ds & Canals, Free,
Railroad Ties, Duration, 306
Raising Fine Seeds, 43
" Gladiolus fr. Seed, 197
" New Strawberries, 145
" Seedling Fruits, 116
" Seeds, Herbaceous Plants, 101
Raisins in So. Cal., 237
Rambling Notes, Fruits and Trees, 142
Random Jottings, 129
" Notes, 300 [36
Rapid Growth, Street Trees,
Rare Plants & Sh'bs, 257, 263
" " Destruction, 214
Raspberry, Autumn-bear-
" Carolina, 366 [ing, 47
" Hardy, 241
" Stewed, 175
" Marlboro, 302
" Souhegan, 366
Rats, To Banish, 210
Ravens in Alaska, 340
Red Bietigheimer Apple, 272
" Gum, 305
" Leaved Endive, 82
" Pepper, Texas, 303
" Wm. Apple, Pyle's, 114
Reeds, Disease from, 278
Relations, Heat to Sexes, 248
" Plants to National Prosperity, 247
Remarkable Discovery, Textile Fibres, 89
" Post Office Law, 348
Remarks, Steam Heat., 231
Remedies, Insect Poison as, 208
" Pear Tree Blight, 113
Reminiscences, Caladium esculentum, 14 [248
Removing Tendrils, Grape,
Rewarding Inventors, 287
Report, Arnold Arbor'm, 95
Reports, Hort. Societies, 61
Retrospect of Summer, 97
Rhododendron not Blooming, 198
Rhus toxicodendron, 156
Richardia hastata, 139
Rid Gardens of Moles, 211
Rifle Practice, Hints, 189
Roads and Travel, China, 5
Roi des Noirs Heliotrope, 328
Root Disease, Peach, 335
Rooting Carnations, Ap'l, 134
Roots, Motion of, 183
" Water Absorption, 54
Rosa Canina, 29
" lucida flora-pleno, 292
" minutifolia, 152
" polyantha, 70
" rugosa, 229
Rose, Am. Banner, 36
" Caroline Goodrich, 108
" Catherine Mermet, 171
" Centenario des Canoens, 5
" Cramoisi superieur, 298
" Culture, Summer, 67
" Dog, Grape Vine on, 181
" " Notes on, 121
" Eglantine, 29, 256
" Etoile de Lyon, 108, 171
" Henry Bennett, 376, 380
" Phila., High Priced, 266,
" Good, 41 [376, 380
" Grafted, 164
" Jean Libaud, 70
" Legend of, 29
Rose, Madame Boll, 101
" " Gabriel Luizet, 171
" Manetti, 232, 323
" " Origin, 187 [264
" Mereville de Lyon, 171,
" Niphetos, 100, 298
" Productive, M. Niel, 75
" Safrano, Origin, 139
" Striped Aggrippina, 139
" Triomphe d' Angers,
" Wild, 342 [234
" W. A. Richardson, 204
" Wood & Mahogany tax,
Roses and Camellias, 43 [51
" by Seed, 132
" Grafting, 132
" Hole's Book About, 316
" in Autumn, 133
" in Winter, 136
" Jap. or Polyantha, 324
" M. Niel under Glass, 73
" New French, 298
" Old-fashioned, 157
" on Manetti Stock, 164
" Pedigree of, 171
" Polyantha, Impr'd, 162
" Preserving, Winter, 293
" Stock for, 292
" White Bon Silene, 363
" Winter Treatment, 280
Rothrock's Lectures, 248
Rules for Burning Coke, 139
" of Pomology, 350
Rum, Dandelion, 47
Runner, Strawberries, 110
Rush, Banded, 309
Rushy, H., H., 221
Russian Currants, 175
" Mulberry, 150, 338
Russia, Plums in, 176
Sac or Bag Worm, 37
Safrano Rose, Orig., 139
Salads, 210, 366
Salvia farinacea, 198
San Domingo Mahogany, 18
Sand Pear for Stocks, 114
Santa Fé Tertio-millenn., 221
Sashes and Sod, 288
Scale, Spruce Oil for, 13
Schizmatoglottis longiapatha, 298, 299
Schoolmaster Apple, 113
School of Hort. West, 347
Schools, Industrial, 30
Schumaker Peach, 111
Science, Ag., Diffusion, 276
Scientific Angler, The, 188
Scratching for Worms, 349
Season, Flowers out of, 311
Seasons in Italy, 89
" Transplanting, 6
Seed, Eng. Gooseberry, 304
" Gladioli from, 197
" Gloxinia, 202
" Growing, Phila., 268
" Roses by, 132
Seedless Persimmon, 49
Seedling Azalea, Early Bloom, 137
" Carnations, 43
" Chrysanthemums, 71
" Clematis, 230
" Coleus, 266
" Marie Louise Pear, 336
" Fruits, Raising, 116
" Geraniums, 204
Seeds, Bad, 46
" for Starting Forests, 50
" Herbaceous, Plants, Raising, 101
" Raising Fine, 43
" Valuable, 118 [ture, 287
Select Plants, Industrial Cul-
Sept., Good Orchids in, 328
" Number Notes, 291
Sex & Heat, Relation, 24, 248
Shade, Evergreens in, 101
" Trees, 131
Sheep, Kalmia and, 89, 374
Short Postage, 348
Shows, Chrysanthemum, 384
Shrubs & Plants, 257, 263
Sidonie Rose, 228
Sickly Plants, Hot Water for, 171
Silk Moth, New Hybrid, 152

Silk Mulberry, 370
" Worms, Osage for, 52
Silver Fir, Large, 306
" Maple, Raid on, 219
Single Dahlias, 5, 68
Sketch, Dr. Asa Gray, 27
Slater, Jno. W., Death, 94
Small Houses, Heating, 73
Smilax, 108
Smith, Danl., Death, 350
" " B., Death, 158
Smoke, City, 54
Snowball, Japan, 166
Soil and Quality, Strawberries, 175
" for Fuchsias, 40
" So. Cal., Fruit, 206, 236
Some Kansas Plants, 148
" July Bloomers, 258
Sorghum, Sugar from, 374
Souhegan Raspberry, 366
Sound Mind, Sound Body, 94
South Australia, Woods and Forests, 50
" Earliest Peaches, 15, 211
" Japan Persimmon in, 15
" Vegetable Growing, 177
Southern Cal., Fruit Culture, 206, 236
Spain, Horticulture in, 219
Spare the Forests, 178
Spark Arrestors, 51
Sparrow, English, 223
Specimens, Isolated Clematises as 131 [219
" Plants, Fruits, Flowers,
Spiræa venusta, 198
Spiral Growth, 52 [309
Sponges, Fresh Water, 307,
Sportsmen's Gazetteer, 316
Spring beauty Cone Trees, 37
" To Break Land in, 143
Spruce Oil Liquid, 13
" White, 339, 376
Squashes, 83
Staphylea bumalda, 139
Starting Forests, Seeds and Plants, 50
Staunton, Va., Notes, 35
Steam Heaters, 288
" Heating, 76, 102, 107, 137, 138, 166, 168, 199, 231,
" " Cost, 9 [205, 380
" " England, 71
" " Facts about, 200
" " Greenhouses, 39, 102
" " HotWaterBetter, 262
Stephanotis floribunda, 296
Stevia, Dwarf, 292
Stewed Raspberries, 175
Stigmaphyllon ciliatum, 68, 206 [at 153
St. Helena, Under Willows
" Paul, Forestry at, 306
Stock for Grafting Roses, 292
" Manetti, Roses on, 164
" on Graft & Reverse, 173
Stocks, Budded, Apple, 84
" Manetti Rose, 323
" Sand Pear for, 114
Strauch, Adolph, Death, 190
Strawberries, Best, 333
" Degeneracy, 145, 175
" Good, 333
" in England, 114
" in Europe, 144
" Latest New, 16
" New, 145
" " Raising, 145
" Pistillate, 144
" Popular, 240
" Soil and quality in, 175
" Winter, Covering, 301
Strawberry, Garden Culture of, 145
" James Vick, 302
" Perfect, 145
" Primo, 47, 211
" Runners, 110
Street Tree, Ash as, 101
" " Hackberry as, 260
" Trees, Rapid Growth, 36
Strelitzia regina, Culture, 74
Streptosolon Jamesoni, 148, 298
Striped Agrippina Rose, 139
Strong Asparagus Plants, 114
" Rooted Perennials, 160
Structures, Uses of, 218
Study of Sponges, 307, 309
Stumps, Clear Ground of, 246
Suber-cell, 372
Substitute for Cotton, 47
Sub-Tropical Plants, 60
Success in Business, 270
Sugar Beet Discoverer, 216
" Crop, Maple, Failure, 216, 274
" from Sorghum, 374
" in America, 82
" in Corn, 210
" Making, Northern, 141
Suitable Position, Plant, 280
Summer Flowering Vines, 67
" Retrospect, 97
" Rose Culture, 67
Sun-Dried Wood, 147
Sunflower in Industry, 242
Sunflowers, Heliotropism, 54
" Large, 293
Sunken Forests, 217
Supply, Wood, Future, 117
Swanley White Violet, 363
Swindling Agents, 26
Sycamore Tree, Amer, 274
Tallest Nurseryman in U. S., 187
Tall Palm, 298
Tangerine Oranges, 49
Tannin in Bark of some U. S. Trees, Amount, 85
Tanyah alias C. Esculentum, " and Abo, 28 [120
Tea, Wild, 341
Temperature & Hardiness, 24
Tendrils, Grape, Remov'g, 248
Tennessee Hand Book, 316
Tertio-Millennial, Santa Fé,
Texan Prosperity, 46 [221
Texas, Apples in, 300
" Botany of, 311
" Hort. Society, 160
" Peaches, Earliest, 15
" Red Pepper in, 303
" Trees of 305
" Vegetable Culture, Profits, 145
Textile Fibres, Remarkable Discovery, 89
Thinning Fruit, 176
Thomas Jno. J., 348, 378
Ties, R. R., Duration of, 306
Tigridia, White, 5
Timber, Crooked, Value, 273
" Duration, Variabil., 147
" Good & Bad, Microscope Distinctions, 189
" Land, Latest from, 370
" Location & Quality, 245
" Locations, Valuable, 245
Timber on Prairies, 180
" Pacific Coast, 246
" Tree, China, 147
" Trees, England, 245
" British Control, 273
" Value of, 273
" White Pine, 273
Tithes in Canada, 28
Tobacco Water, Insects, 171
Todeas at Glasnevin, 265
Tomatoes, 295, 368
" Best, 301
" Canning, 210
" Grafted, Tubers, 23
Tomato, The Favorite, 48
Torrington, Notes from, 2
Training Geraniums, 323
Transplanting Seasons, 6
Trapping Insects, 197
Traps, Mouse, 113
Travels of Indian Corn, 30
Treatment Roses, Winter, 260
Tree, China, Timber of, 147
" Lemon, Fruiting, 139
" Management, Queries,
" Mist, 70, 323 [325
" Paint, Boardman's, 49
" Pepper, 370
" Planting, Isle Man, 338
" " Kansas, 179
" Street, Ash as, 101
" " Hackberry as, 260
Tree, Tulip, Large, 370
" Virgin Mary's, 29
" Water Pitch, Large, 245
Treeless Prairies, Origin, 23
Trees, Dearth, Prairies, 150
" Amer. in Europe, 343
" and Fruits, Notes, 142
" by Mail, 348
" City, Hope for, 100
" Coniferous in Spring, 37
" Dead Wood on, 374
" for Pleached Walks, 293
" Great Planter of, 179
" Growth of, and Wet Weather, 54
" in Catalogues, Growth of, 139
" Large, Paris Green, 165
" Largest American, 147
" Lombardian Mulberry,
" Longevity of, 371 [118
" of Texas, 305
" Poplar, 183
" Shade, 131
" Street, Rapid Growth, 36
" Timber, England, 245
Tricks in Trade, Mean, 348
Tricolored Celeriac, 48 [234
Triomphe d' Angers Rose,
Tropæolum Canariensis, 225,
" Double, 58 [322
Trouble with Tall Palm, 298
Truck Farming in South, 189
True Egyp. Lotus, Hardy, 130
Truffles in Philada., 210
Tuberose Diamond, 10, 41
" " Reply, 127
" Pearl, 291
Tuberoses, Double, 164
" Fine, 328
Tuberous-rooted Grape, 366
Tubers, Graft, Tomatoes, 23
" Potato Plants, 311
Tulip Tree in China, 218
" " Large, 370
Twe dan Fa, 93
Twining of Vines, 342
Two Good Apples, 267
Under the Hawthornes, 57
" Sashes and Sod, 283
Under the Willows, St. Helena, 153
U. States Ferns, 340
" " Vanilla Bean in, 341
University Gardens, Cal., 315
Unworthy Novelties, 226, 290
Uses of Structures, 218
Valuable Seeds, 118
" Value of Fruit Farms, 366
Value of Mesquite, 273
" " Timber, 273
" " " Crooked, 273
" Timber Locations, 245
Vanilla Bean in U. S., 341
Variability, Law of, 149
" Timber Duration, 147
Variation, Cotton Plants, 54
" in Pears, 271
" in Plants, 250
Varied Tastes in Food, 60
Variegated Austrian Pine,
Variety in Nature, 374 [358
Various Inquiries, 90
Vegetable Culture, Texas, Profits, 145
" Garden, Frogmore, 302
" Growing, South, 177
" Insects, Poisons, 206
Vegetables, 82
" Charleston, S. C., 177
" Eng. and Amer., 336
" Good, 114
" Ornamental, 48
" Wholesale & Retail, 380
Versaillaise Currant, White-fruited, 47
Vervaene, Fred'k, 381
Victoria Lily, Flowering, 261
" Regia in Open Air, 66
Vilmorin, M., Letter from, 25
Vines, Summer Flower., 67
" Twining of, 342
Violet, Bird-foot, Range, 311
Violets, Am., Improved, 260
Virginia, Forest Report, 18
" Notes from, 36, 163
Virginias, The, 96
Virgin Mary's Tree, 29
Visit, Peach Orchard, 110
" Soldiers' Home, 289
Viticultural Rept., Cal., 158
Walking Fern, 149
" Walks, Asphalt, 198
Walks, Clearing, Weeds, 70
" Pleached, Trees for, 293
Walnut, Californian, 271
" Early Fruiting, 16
Warder, Jno. A., Death, 286
Warfare on Daisies, 125
Warning to Florists, 135
Wash'n, Agr. Grounds, 324
Waste Bones in Cities, 47
Water Absor. by Roots, 54
" Cresses, Growing, 303
" Lily, New, 43
" Pitch Tree, Large, 245
Way, Notes by the, 71
Weather & Oranges, Fla., 25
Weeds from Walks, 76
West, Pear Growing in, 272
" School Horticult., 347
Wet Season, So. Cal., 207
" Weather & Growth, 54
What is a Garden, 93
Wheat, Cross-Breeding, 52
" Cross-fertilize, Can, 19
" Fertilization, 86
" Martin's Amber, 304
When to Break Land, 143
White Bon Silene Rose, 363
" Bouvardia, Dbl., in Europe, 108
" Daphne Gwenka, 229
" Elephant Potato, 17
" Versaillaise Currant, 47
" Grapes, 29
" Pine, 273 [by, 24
" " Foretelling Weather
" Pyrus Japonica, 165
" Sage as Bee Plant, 242
" Spruce, 339, 376
" Tigridia, 5
" Violet, Swanley, 363
Wiegela candida, 88
Wilder, Col. M. P., 349
" Address of, 317, 350
Wild Rose, 342
" Tea, 341
Willow, Nap. Weeping, 29
Willows, 338
" St. Helena, Under, 153
Window Gardening, 78, 359
" North, Flowers, 71
Wine, Beet, 14 [364
Winter Carnation, Yel., 204,
" Covering Strawb's, 301,
" fl. Begonias, Culture, 138
" Carnations, Disease, 328
" Preserving Roses, 293
" Roses in, 136
" Treatment, Roses, 260
Wm. A. Richardson Rose, 204
Wonderful Fruits, 367
Wood, Annual Growth, 20
" Black Jack Oak, 147
" Pores, Annual Layer,
" Sun-dried, 147 [63
" Supply, Future, 117
Woods of So. Australia, 50
Worcester Co., Mass., Hort. Society, 188
Work of Committees, 349
Worm, Bag or Sac, 37
" Cabbage, 304
" Drop or Bag, 292
Worms, Scratching for, 349
" To Destroy, 110, 209, 242, 302
Xeranthemum annuum superbissimum, 53
Yellow Pine, 338, 370 [364
" Winter Carnation, 204,
Yellows Law, Michigan, 15
" Peach, New, 15
Yeoman's Pear Orchard, 209
York Imperial Apple, 272
Young Gardeners, 96, 155
" Plant, How Starts, 275
Yucca, Notes on, 323
" Observations on, 118
Zebra Grass, 229
Zonale, Little Gem, 364

3 2044 103 119 30